COMPARISON OF PHYSICAL ACTIVITY LEVELS IN A 6th GRADE HIP-HOP DANCE AND FLOOR HOCKEY UNIT OF INSTRUCTION

DISSERTATION

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By

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ABSTRACT

Promoting physical activity in children is a major national health objective with schools being identified as a place to intervene. This study examined physical activity levels in a Hip Hop dance and floor hockey physical education unit with 6th grade students. A secondary purpose was to determine how motor competence, self-efficacy, social situation, and outcome expectancy values changed from pretest-to posttest. Participants (*N*=53) were 6th grade students in an urban middle school

Prior to and following each unit (Hip Hop dance, floor hockey) specific measures of motor competence, self-efficacy, social situation, and outcome expectancy values were taken. The students first participated in an 11 lesson Hip Hop dance unit structured around Social Cognitive Theory in order to promote physical activity. Following this they participated in an 11 day floor hockey unit. During each day of both units the students wore accelerometers to measure physical activity: 1) average activity counts per lesson; 2) the average lesson percent in MVPA; 3) average activity counts during a ten minute bout of dance/game play; and, 4) the average number of minutes of MVPA during a ten minute bout of dance/game play.

Dependent Samples *t*-tests between the Hip Hop dance and floor hockey unit found the dance unit had more physical activity than the floor hockey unit for average physical activity counts ($t[52]= 5.767$, $p<.000$), average percent of MVPA ($t[52]= 5.492$,

p<.000), 3), average activity counts for a ten-minute activity session (*t*[52]= 7.745,*p*<.000), and, average of MVPA for a ten-minute activity session (*t*[52]= 8.568,*p*<.000). The results also showed that students had 46% MVPA in dance and 34% MVPA in floor hockey. Paired samples (pretest, posttest) *t*-tests for both dance and floor hockey found significant pre-to-posttest increases in motor competence for the dance (*t*[18]=--9.123, *p*<.000) and floor hockey (*t*[18]=-8.547, *p*<.000) units and also for self-efficacy for dance (*t*[37]=-3.040, *p*<.004) and floor hockey (*t*[37]= -3.163 , *p*<.003). There were no significant pre-to-posttest changes for social situation for dance (*t*[45]=-1.938,*p*>.059) and floor hockey (*t*[45]=-.873,*p*>.387); also for outcome expectancy values for the dance (*t*[46]=-.029,*p*>.977) and floor hockey (*t*[46]=.679,*p*>.501).These findings have implications to teachers and researchers.

Dedicated to my family

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FIELDS OF STUDY

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CHAPTER 1

INTRODUCTION

Dramatic decreases in physical activity levels concerning American youth have been highlighted in the scientific and popular press (AAHPERD, 2007; Center for Disease Control and Prevention [CDC], 2007; David & Lucile Packard Foundation, 2006; Trust for America's Health, 2007; USDHHS, 1996, 2007). This increase in sedentary behavior is of concern, as a strong body of evidence supports the relationship between physical activity, decreases in chronic disease, maintaining a healthy weight, and promoting positive health outcomes (CDC, 2007; David & Lucile Packard Foundation, 2006; McKenzie, 1991; Trust for America's Health, 2007; USDHHS, 1996, 2007). The literature in physical activity suggests that physical activity levels track from childhood to adulthood, thus it is necessary to examine youth physical activity patterns in order to promote physical activity across the lifespan (AAHPERD, 2007; CDC, 2007; David & Lucile Packard Foundation, 2006; USDHHS, 1996, 2007).

Physical activity levels in adolescents have decreased, in particular, for many vulnerable and at risk populations (CDC, 2007; USDHHS, 1996, 2007). Additionally, over the past three decades there have been many concerns with the number of students considered overweight (Paxson, Donahue, Orleans, & Grisso, 2006, p. 3) due to the lack of physical activity. Moreover, findings from the CDC indicate the percent of students 9

to 13 years who participated in some kind of physical activity for a seven day period were only 74.1% (+/- 2.0) for females and 80.5% (+/- 1.7) for males. These data suggest a number of our children are not engaging in the necessary physical activity for optimal health but also that males are more physically active than females (CDC, 2002; Trust for America's Health, 2007). Specific groups of children including those who are African American have the lowest level of physical activity levels when compared to other racial and ethnic groups (CDC, 2002; McKenzie et al., 2006). Other groups that have been highlighted as having low physical activity levels are those individuals with a lower socioeconomic status have lower activity levels than those who are more wealthy (Bouchard, 2000; CDC, 2002, USDHHS, 1996). Due to their greater risks, females, African Americans, and those from low income areas have been considered vulnerable populations and have been identified as needing physical activity interventions to meet their needs to provide support to increase physical activity levels (McKenzie et al., 2006; McKenzie et al., 2004; Newmark-Sztainer, Story, Hannan, Stat, & Rex, 2003).

As physical activity levels in children have decreased there has been an increase in child overweight and obesity (CDC, 2007). Recent obesity data suggests that 18.8% of children aged 6 to 11 years and 17.4% of children aged 12 to 19 years are obese (CDC, 2007). These rates of obesity mirror the physical inactivity data and suggest that children who are from poor, urban, minority families have the highest rates of obesity (CDC, 2007).

The combination of decreasing physical activity levels and increasing obesity has lead several agencies to highlight the importance of increasing physical activity in American youth. Organizations committed to addressing the physical inactivity epidemic

include: American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD); the Center for Disease Control and Prevention (CDC), National Association for Sport and Physical Education (NASPE), *Healthy People 2010*, U.S. Department for Health and Human Services (USDHHS), American Medical Association (AMA), and American Pediatric Association (APA).

Physical activity cannot be looked at in isolation. Developing and implementing physical activity interventions are often difficult and challenging tasks involving a myriad of different variables that influence physical activity (McKenzie, 2003). Many physical activity researchers have turned to Social Cognitive Theory (SCT) to guide the development of physical activity interventions and consider those variables that might influence physical activity (McKenzie et al., 2004; McKenzie et al., 2006). Social Cognitive Theory has provided a theoretical framework in the physical activity literature that not only looks at physical activity levels, but also those factors (secondary variables) that may impact activity levels (Bandura, 1998; Bandura, 2004; Hortz, 2005; Stevens, 2006; Winters, 2001). Social Cognitive Theory includes three categories of constraints that have the potential to influence physical activity levels: personal/cognitive factors such as self-efficacy, social situation, and outcome expectancy values; behavior factors such as motor competence; and environmental factors such as the social and physical environment (Bandura, 1986).

Social Cognitive Theory provides a theoretical framework from which to develop sound physical activity interventions to positively influence children (Baranowski, Anderson, & Carmack, 1998). Much of the physical activity work undertaken with adolescents and children has been conducted using SCT (McKenzie et al., 2006;

McKenzie et al., 2004; Simons-Morton et al., 1997). Social cognitive theory was used in this study because it aids in understanding and interpreting physical activity measures in physical education and provides a theoretical framework from which to identify what other variables may impact physical activity levels of youth (Winters, 2001).

The physical education setting has been identified by a number of organizations (AMA, CDC, NASPE) and national reports (*Healthy People 2010* and Shape of the Nation) as the one place where the nation can promote physical activity in youth (CDC, 2007; McKenzie, 1991; Trust for America's Health, 2007; USDHHS, 1996, 2007). The school is identified as an optimal site for attempting to increase physical activity for children because it is accessible to high volumes of students and can potentially influence physical activity levels of a significant proportion of children in the USA (Ward, Saunders, & Pate, 2007). Thus, schools can promote physical activity for youth before, and after school, and during physical education (AAHPERD, 2006). Many organizations have recommended specific amounts of physical activity during school physical education and these guidelines are pertinent to this study.

Both NASPE (2004) and the CDC (2002) have determined that it is necessary for children (5-18 years) to get at least 60 minutes of physical activity on most or all days in each week (p. 1). A number of agencies such as NASPE and the CDC have called for physical education classes to have at least 50 percent of class time spent in moderate to vigorous physical activity (MVPA) (USDHHS, 2007). Moreover, a *Healthy People 2010* objective for physical education includes increasing the time students spend in physical activity to 50 percent of the lesson (USDHHS, 2007). Research on physical education has suggested that the average amount of physical education class time spent in MVPA

ranges from less than 10 percent and as high as 40 percent (Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hara, 1991). More recently a study was conducted on the physical activity of children and indicated that 36.6 percent of children spent less than 60 minutes daily in MVPA, and only 12.8 percent of children received fewer than 30 minutes during physical education (Simons-Morton et al., 1997, p. 45).

There are a number of reasons that could account for inadequate time spent in physical activity in physical education. One reason is the limited time allocated for physical education classes (McKenzie, 2003). Also many times there are concerns with management or waiting time issues, which limits opportunities for students to become active (McKenzie, 1996). With little physical education class time spent in MVPA, it is necessary that the school physical education curriculum activities be re-thought and selected and developed to maximize physical activity outcomes for students regardless of gender and skills (McKenzie et al., 2006).

Traditionally, secondary physical education curricular have consisted of a variety of different sport units (Staffo, 1991). Research on teaching has suggested that these sport units often do not meet the needs of girls and are biased to the more skilled student (McKenzie et al., 2004; McKenzie et al., 2006; Newmark-Sztainer, Story, Hannan, Stat, & Rex, 2003; Stone, McKenzie, Welk, & Booth, 1998). Thus, there is a need to explore alternate physical education curriculum contents, and include the content that has the potential to promote physical activity and maximize MVPA levels. Dance may be one way to achieve such physical activity outcomes.

Dance is an activity that is accessible to many students and students do not necessarily need to have high levels of skill or a sports background in order for them to engage in the activity and get MVPA (McKenzie, 2003). Dance is often highly motivating and culturally relevant to African American students and allows students to explore ways of movement though being active (Hastie, Martin, & Buchana, 2006; Stovall, 2006). Dance may be a way in which to promote physical activity in at risk populations, as it is culturally relevant to these populations (Hastie, Martin, & Buchana, 2006; Stovall, 2006; Yaussi, 2005). Certain kinds of dance such as Hip Hop dance are also gender neutral and allows opportunities for both genders to be successful (Stovall, 2006; Yaussi, 2006). Hip Hop dance has been strongly associated with the African American culture and is part of popular culture for African American children and adolescents (Stovall, 2006).

Dance may also be an activity where students can have high levels of MVPA regardless of culture, race, gender, and socioeconomic status. Thus, for the purpose of this study a Hip Hop dance unit was identified as a unit of instruction in physical education that might promote physical activity for both males and females when compared to a traditional sport unit of instruction such as floor hockey. Examining the physical activity levels during different kinds of instructional units is important as there are high rates of physical inactivity during physical education classes as indicated above (USDHHS, 1996). If students can increase their physical activity levels during physical education and engage in MVPA, this may promote better health outcomes in those children (CDC, 2002; USDHHS, 1996).

In line with SCT, a child's engagement in physical activity is influenced by many other factors/variables (Bandura, 1986). A number of studies in the literature have spoken to the impact of secondary variables that may influence physical activity levels in children (Petosa, Hortz, Cardina, & Suminski, 2005; Winters, Petosa, & Charlton, 2003). The constructs of motor competence (students skill levels in dance and floor hockey), dance and floor hockey self-efficacy (students belief of their abilities in dance and floor hockey), social support (the support students have from peers), and outcome expectancy values (outcome expectations of participation in dance and floor hockey and the value students place on these outcomes) were considered important personal and behavioral constraints influencing physical activity levels in this study. The secondary variables are important as they influence physical activity levels and align with the constraints of SCT (Bandura, 1986; Ward, Saunders, & Pate, 2007).

These secondary variables were chosen because they have the potential to influence physical activity levels (Baranowski, Anderson, & Carmack, 1998; Winters, 2001). Physical activity interventions are one way in which change can be made to influence not only physical activity levels (dependent variable), but also an individuals motor competence, self-efficacy, social situation, and outcome expectancy values (independent variables). There have been many successful interventions that have attempted to increase activity levels but a limited number of these interventions have shown how these secondary variables influence program outcomes (McKenzie et al., 2006; McKenzie et al., 2004; Simons-Morton et al., 1997). One reason why some of these interventions have not been as successful as planned is because they focus only on increasing physical activity levels during physical education without a regard for the

other factors that might influence physical activity. Thus, it is necessary to consider physical education curricular that not only influences physical activity levels but also other secondary variables such as motor competence, self-efficacy, social support, and outcome expectancy values.

Statement of the Problem and Significance of the Study

Studying physical activity is important because many national agencies have recognized that as children develop into adolescents, a dramatic decrease in activity physical levels occur (CDC, 2007). In summary, today's adolescents are at risk for chronic disease later in life, in part, because of decreasing physical activity levels (AAHPERD, 2007; CDC, 2007). With the trend toward decreased physical activity levels overall and low MVPA in physical education classes, clearly there is a need to intervene with adolescents and examine physical education curricula that might better promote physical activity in physical education (USDHHS, 1996).

It is clear that there is a national concern about the physical activity levels of children and we need to examine existing physical education curricula to determine how they might be changed to better promote physical activity. Developing physical activity interventions, trying new physical education curricula, and assessing student's physical activity levels are all important steps forward in combating this physical inactivity epidemic.

Purpose of Study

The primary purpose of this study was to examine the influence of two different units of instruction (Hip Hop dance and floor hockey) on the total physical activity levels and MVPA of 6th grade students in middle school physical education. Since this study

was situated within Social Cognitive Theory, a secondary purpose of the study was to examine changes in motor competence, self-efficacy, social situation, and outcome expectancy values from pretest to posttest as a result of the dance or floor hockey instructional unit.

Primary Research Hypotheses

Hypothesis 1 – A Hip Hop dance unit will have greater physical activity levels than a floor hockey unit for 6th grade students in physical education.

H_{1a}: Were there differences in average physical activity counts per lesson between a dance and floor hockey unit?

H_{1b}: Were there differences in the average percent of MVPA between a dance and floor hockey unit?

H_{1c}: Were there differences in average activity counts for a designated ten-minute activity session between a dance and floor hockey unit?

H_{1d}: Were there differences in the average MVPA for a designated ten-minute activity session between a dance and floor hockey unit?

Hypothesis 2 - Motor competence will significantly change from pretest to posttest for a Hip Hop dance unit and a floor hockey unit for 6th grade students in physical education.

H_{2a}: Were there pretest to posttest changes in motor competence within the dance unit?

H_{2b}: Were there pretest to posttest changes in motor competence within the floor hockey unit?

Hypothesis 3 – Self-efficacy will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{3a}: Were there pretest to posttest changes in self-efficacy within the dance unit?

H_{3b}: Were there pretest to posttest changes in self-efficacy within the floor hockey unit?

Hypothesis 4 – Social situation will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{4a}: Were there pretest to posttest changes in dance social situations within the dance unit?

H_{4b}: Were there pretest to posttest changes in sports social situations within the floor hockey unit?

Hypothesis 5 – Outcome Expectancy Values will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{5a}: Were there pretest to posttest changes in dance outcome expectancy values within the dance unit?

H_{5b}: Were there pretest to posttest changes in sport outcome expectancy values within the floor hockey unit?

Limitations

The limitations of a study are the influences not controlled for or restrictions by the investigator (Thomas & Nelson, 2001, p. 56). The limitations to this study include many factors that the researcher has acknowledged and are as follows:

1. The number of participants (*N*=53) included only three physical education classes because of limited resources and funding.
2. This sample was a convince sample therefore randomization did not occur and intact classes were examined.
3. Teacher effects, such as having the regular physical education teacher verses the substitute teacher implement the lessons.
4. The researcher also influenced the dance unit strongly, while the floor hockey unit was more naturalistic, although still influenced by the researcher.
5. There was lack of knowledge of the students prior experiences with dance and floor hockey.
6. There was lack of knowledge with how many students practiced the dance during the implementation of the unit.
7. Testing effects may have occurred as a result of the pretest influencing the result of the posttest.
8. There were twice as many male students compared to female students who participated in this study. Thus, gender differences could not be examined as there was not enough statistical power to undertake the analyses by gender.
9. There was a significant attrition rate (77%). The principal changed the students enrolled in the physical education classes because of behavioral issues. This was a big concern in class two where 14 students left and were replaced with a new group of students. Class one and three only had one person out of each class replaced.
10. There was variability in the lesson time, which was accounted for statistically.

11. The differences in having a female regular physical education teacher verses a male substitute teacher.
12. Behavioral issues within the class may have influenced the ability to promote higher physical activity levels since many times management (non-active) time was spent disciplining students.
13. The middle school gymnasium in this study was small compared to other middle school gymnasiums, which could have influenced physical activity levels.

Delimitations of the Study

The delimitation of a study were the choices the researcher made concerning a problem in the study (Thomas & Nelson, 2001, p. 56). This study was delimited in the following ways:

1. Sixth grade middle school students, who were African American and lived in an urban area in central Ohio. These students were also classified as having low socioeconomic status and educationally "at risk."
2. The physical education teachers involved in this study were an African American female who had taught in urban schools for 14 years and an African American male who previously taught physical education for 15 years in a suburban district.
3. Having two units of high instructional quality (based on the motor competence results) may not reflect the "typical" middle school physical education instructional context.

4. The teacher had experience teaching dance, although had never implemented a Hip Hop dance unit.
5. The nature of the two units being dance and floor hockey.

Definition of Terms

Accelerometers – a small pager-sized device that measures intensity, frequency and duration of physical activity (Welk, 2002).

Expected Outcome – a persons belief in their consequences of participating in an activity (Bandura, 1986, p.391; Bandura, 2004; Ward, Saunder, & Pate, 2007, p. 26)

Media Modeling – modeling in which the media presents an image that an individual would like to act, dress, or perform in a given manor.

Middle School – for the purpose of this study middle school is 6^{th} though 8^{th} grade.

Modeling – modeling in which a teacher and/or peer performs an activity in which the students engage (Rink, 1993).

Moderate to Vigorous Physical Activity (MVPA) –a level when indivuals experience heart rate increase, metabolic equivalents (METs) 3 to 6, the Borg scale 11 to 14 exertion, burning 3.5 to 7 (kcal/min) (CDC, 2007, p. 2).

Motor Competence- also known as a skill, or the ability to perform a cognitive task based on practice **(**Schmidt & Wrisberg, 2004, p. 28).

Obesity - "a condition characterized by the excessive accumulation and storage of fat in the body" (Webster's Dictionary, 2007, p. 1).

Outcome Expectancy Values- what an individual believes (desired or undesired) will happen when participating in physical activity (Petosa, Hortz, Carrdina, & Suminski, 2005, p. 159).

Peer Modeling – modeling, which students peers demonstrate a particular way of acting or participating in a given activity.

Physical Activity – bodily movement result in contraction of muscles that dramatically increases the amount of energy expenditure (USDHHS, 1996, p. 20).

Reciprocal Determinism - a diagram that demonstrates how determinants interactively act with each other (Bandura, 1986, p. 23).

Self-Efficacy – A person belief about their ability to engage in a specific activity (Bandura, 1986, p. 391; Bandura, 2004; Ward, Saunder, & Pate, 2007, p. 26).

Social Situation - "a persons perception of their environment and the evaluation of their interaction with it" (Bandura, 1986, p. 347).

Triadic Reciprocal Determinism – constructs that interact with each other and include environmental, cognitive, and behavioral factors (Buckworth & Dishman, 2002).

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The review of literature will provide an overview of the physical activity literature including: importance of physical activity, trends in physical activity, high risk populations, agency goals and physical activity, physical activity in physical education, theoretical framework, measurement of physical activity, and physical activity interventions. The literature review will then describe the secondary variables associated with physical activity (motor competence, self-efficacy, social situation, and outcome expectancy values), and gaps in the literature.

Importance of Physical Activity

Physical activity plays an important role in maintaining a healthy body (Graf, Predel, Tokarski, Dordel, 2006, p. 218) and also preventing and controlling for a variety of diseases (Trust for America's Health, 2007, p. 54; USDHHS, 1996). When individuals are physically active, there is an increase in optimal health and decreases in hypertension, premature mortality, heart disease, cancers, and diabetes (USDHHS, 1996, p. 5). In addition, when individuals are physically active there has been a positive link to decreasing high blood pressure, type 2 diabetes, hardening of the arteries, sleep problems,

liver disease, and polycystic ovary disorder (Paxson, Donahue, Orleans, & Grisso, 2006, p. 47).

Engaging in physical activity, no matter the amount, can improve an individuals overall health (Trust for America's Health, 2007, p. 54; USDHHS, 1996). Engaging in physical activity is important because the body positively responds with positive effects to the musculoskeletal, respiratory, and cardiovascular systems (USDHHS, 1996, p. 5). Participating in physical activity, also aids in the reduction of anxiety and depression by improving ones daily functions throughout a lifetime (USDHHS, 1996, p. 5). Clearly physical activity is important yet over past decade there are worrying trends with declines in physical activity in children.

Trends in Physical Activity

Clearly, adequate amounts of physical activity are important as physical activity reduces many diseases (Bouchard, 2000, p. 233). Over the past decade there have been some worrying trends with children's physical activity levels declining (USDHHS, 1996). Americans currently have low levels of physical activity, (USDHHS, 1996, p. 7) which results in a high cost to society (Trust for America's Health, 2007).

According to the Centers for Disease Control and Prevention (CDC, 2007) current trends suggest children 9-13 years old have limited physical activity levels, thus influencing their overall health. Moreover, the CDC (2007) has found that only 38.5% of children 9-13 years participate in organized physical activity in non-school hours, while 22.6% refrain from engaging in free-time physical activities (p. 1). In addition, there is concern that children are spending increasingly more time in sedentary activities such as those associated with "screen time" such as various media like television and videogames

(Gortmaker et al., 1999). Research has found that the percent of time individuals spend in MVPA has decreased dramatically in line with increases in screen time (Trust for America's Health, 2007). Although many students at this age are not receiving adequate amounts of physical activity, this is an even greater concern with "at risk" populations (AAHPERD, 2007).

There are a number of at-risk populations that have been identified due to their low physical activity levels (Kimm et al., 2002). An annual national report called *Shape of the Nation* has identified that females are less active than males, and African American and Hispanic students are less active than white students (AAHPERD, 2007, p. 1; Sallis, Zakarian, Hovell, & Hofstetter, 1996; Schofield, Mummery, Schofield, & Hopkins, 2007; Trost, Pate, Ward, Saunders, & Riner, 1999). Other at-risk trends suggest that children from low income families have lower physical activity levels than children from wealthier families (USDHHS, 1995, p. 43). That is, as social economic status (SES) decreases so do physical activity levels (USDHHS, 1995, p. 43). Current trends with "at risk" populations are described below.

High Risk Populations

There are many populations at risk for low levels of physical activity and include individuals who are African American and Hispanic, individuals with low socioeconomic status, and females (CDC, 2007; Resnicow, Taylor, Baskin, & McCarty, 2005; USDHHS, 1996).

Ethnic Minorities

Concerns exist with low levels of physical activity with ethnic minorities include African Americans and Hispanics who are less active than white Americans (Bouchard, 2000). Data from the CDC (2007) has indicated that of African American children aged 9-13 years, only 24.1% (+/-3.8) of African Americans, 25.9% (4.0+/-) of Hispanics, and 46.6% (+/-2.5) of white Americans indicated they participated in organized physical activity during a seven day period. Other data suggest that 74% (+/-4.6) of African Americans, 74.6% (+/-3.9) of Hispanics, and 79.3% (+/-1.7) of whites Americans indicated they participated in free-time physical activity during a seven day period. Therefore, this supports evidence that African Americans and Hispanics have lower physical activity levels than white Americans.

Another study from the CDC (2004) has indicated that only 29.5% (±3.4) of African-American adolescents have reported meeting the CDC guideline of participating in 60 minutes of physical activity five or more days, while their white-American peers reported 38.7% (±2.6) and Hispanic peers reported 32.9% (±3.1) (CDC, 2004). Also the CDC (2004) has determined that only 70.2% (±2.1) of white Americans, 62.0% (±2.7) of African Americans, and 69.4% (±3.3) of Hispanic Americans have identified that they participated in at least 20 minutes of vigorous physical activity on three or more days a week and/or at least 30 minutes of moderate physical activity on five or more days a week. Moreover, in 2002, the CDC also reported that only 48% of African-American students met the vigorous physical activity recommendations (p. 2). According to this data, clearly African Americans and Hispanics are at higher risk for physical inactivity, thus, there is a need to intervene with this population. Aside from ethnic minorities,

individuals with low socioeconomic status are also considered an “at risk” population for low physical activity levels when compared to individuals who are more wealthy.

Low Socioeconomic Status

Typically, individuals who adopt and/or maintain an active lifestyle, have higher socioeconomic status (USDHHS, 1996, p. 42). Physical activity and socioeconomic status (SES) influences individuals through many factors such as the neighborhood in which students live and play, equipment availability during and after school, opportunities for after school activities, and parent support (Story, Kaphingst, & French, 2006, p. 119; USDHHS, 1996). The neighborhood plays an important role in influencing activity levels because of safety, tax dollars from businesses, and community resources (Ward, Saunders, Pate, 2006). If students are limited in safety and funding from tax payers, this makes it difficult for communities to support opportunities for the youth to be active (Sallis, & Glanz, 2006)

Another big issue tied to socioeconomic status is that of parent support and income. If parents do not make enough money to support their child to engage in activity, it is difficult for students to obtain opportunities, especially outside of schools, that would potentially increase physical activity levels (USDHHS, 1996). Moreover, additional research from the CDC (2007) have found a link between income and a students’ ability to participate in physical activity. Findings indicate when parental income was less than $25,000, 79.6% (+/-4.6) of students 9-13 years indicated expense as a reason not to participate in physical activities. While students who had parental income from $25,000 to $50,000, 53.6% (+/-3.4) indicated expense was a factor for not participating in physical activities; and parents who made over $50,000 only 30.8% (+/-2.6) of children

indicated expense was a reason for not participating in physical activities. There are differences in prevalence of activity levels in children with low socioeconomic status, in addition to ethnic minorities (Paxson, Donahue, Orleans, & Grisso, 2006, p. 11). Despite strong trends on the diminished physical activity of children from minority groups and low income families, gender differences in physical activity seem to cut across ethnic/racial and income barriers (USDHHS, 1996).

Gender

Research findings have indicated that females from all walks of life are typically less active than boys (Bouchard, 2000, p. 214). Recent research suggested that of students aged 9-13 years old, 74.1% (+/-2.0) of females and 80.5% (+/-1.7) of males had participated in free-time physical activity during a seven day period. In addition, the Youth Risk Behavior Survey reported 7.3% of males and 13.8% of females had not participated in vigorous or moderate physical activity during the preceding seven days. Thus, it is evident that female's physical activity levels are lower than males. Another study conducted by Sallis, Zakarian, Hovell, and Hofstetter (1996) found that females had lower physical activity levels than males during physical education (McKenzie, 2003). Clearly, data has revealed that when it comes to physical activity levels, males are more active than females (USDHHS, 1996), no matter the setting.

Conclusion

Although there are concerns about all children relative to decreasing levels of physical activity, there are specific populations for which this concern is greater (AAHPERD, 2007). A number of "at risk" populations have been identified as they pertain to physical activity and include African American and Hispanic children,

individuals with lower socioeconomic status, and females. As many children have low physical activity levels, this global concern has led a number of agencies to develop physical activity guidelines for children to combat this epidemic.

Agency Goals and Physical Activity Guidelines for Children

Many national and international agencies have recognized concerns for lack of physical activity in all populations (AAHPERD, 2006; CDC, 2005; Trust for America's Health, 2007; USDHHS, 1996). Thus, many organizations have taken it upon themselves to develop recommendations to increase youth physical activity levels. Agencies that have developed goals include the National Association for Sport Physical Education (NASPE), Center for Disease Control (2007), *Healthy People 2010,* AAHPERD (2007), and American Heart Association (AHA). These organizations recommend and provide the following goals for increasing physical activity during the day and in schools:

- ***NASPE (2007) and CDC (2007)- Promote Physical Activity During the Day***
    - children should receive at least 60 minutes of daily physical activity that is age appropriate (CDC, 2007; Story, Kaphingst, & French, 2006, p. 119).
    - Daily physical activity levels should include moderate and vigorous physical activity, in which students should spend majority of the time in intermittent activity (CDC, 2007; Story, Kaphingst, & French, 2006, p. 119).
- ***Healthy People 2010- Promote Physical Activity in Physical Education***
    - 22-8 "Increase the proportion of the nation's public and private schools that require daily physical education for all students (USDHHS, 2007)."

- 22-9 “Increase the proportion of adolescents who participate in daily school physical education (USDHHS, 2007).”
- 22-10 “Increase the proportion of adolescents who spend at least 50 percent of school physical education class time being physically active (USDHHS, 2007).”

AAHPERD (2007), NASPE and AHA- Increase Physical Activity in Schools and Physical Education

- Physical education should be quality and part of education for K-12 (AAHPERD, 2007, p. 9; NASPE, 2005).
- Certified/licensed teachers in physical education should provide documentation of licensure (AAHPERD, 2007, p. 9).
- Weekly time for physical education should be sufficient (i.e., 150 minutes/ per week = elementary; 225 minutes/ per week = middle/high school) for K-12 students (AAHPERD, 2007, p. 9).
- Physical education and National Standards must reflect student learning (AAHPERD, 2007, p. 9).
- Every state must set standards in physical education (AAHPERD, 2007, p. 9).
- Each state must meet minimal physical education guidelines for students graduating from high school (AAHPERD, 2007, p. 9).
- Other physical activity programs should not be replaced for physical education such as band or cheerleading (AAHPERD, 2007, p. 9).
- The school day must have more physical activity programs (AAHPERD, 2007, p. 9).

- Physical education programs should be monitored by parents (AAHPERD, 2007, p. 9).
- Establish safe communities that have "well-maintained and close-to-home sidewalks, bike paths, trails, and recreation facilities" (AAHPERD, 2007, p. 9).

By implementing these guidelines, it will not only increase student's activity levels, but also provide students with adequate amounts of physical activity necessary to become healthy individuals. Many agencies (AAHPERD, AHA, CDC, *Healthy People 2010*, NASPE) have highlighted the importance of physical education as a place to promote national goals for physical activity, thus it is important to examine what is known about physical education and physical activity.

Physical Activity in Physical Education

Physical activity levels have been researched in physical education and can play an important role in increasing student's activity (Simons-Morton, Baranowski, Forthofer, & O'Hare, 1991; Simons-Morton, O'Hare, Simons-Morton, & Parcel, 1987). There have been a number of studies that have found when physical education is modified, activity levels are increased (Gortmaker et al., 1999; McKenzie et al., 1995; McKenzie et al., 2004; Simons-Morton, Baranowski, Forthofer, & O'Hare, 1991; Webber et al., 2008).

One study in physical education in Texas found that at the pretest students were physically activity for only 10% of class time (Simons-Morton, Baranowski, Forthofer, & O'Hare, 1991). When involved in the intervention to increase student's physical activity levels (a description of the intervention will be provided later), at the posttest researchers were able to increase activity levels to 40% of the lesson (Simons-Morton, Parcel,

Baranowski, Forthofer, & O'Hare, 1991). Other studies such as the Child and Adolescent Trial for Cardiovascular Health (CATCH) found that students were engaged in MVPA for 36% of the class time, thus not meeting guidelines of 50% or more of class-based physical activity based on recommended guidelines (McKenzie et al., 1995). Meeting the national physical activity guidelines of 50% of class time in physical activity for physical education is a challenging task for teachers and researchers (AAHPERD, 2007).

The interventions concerning physical activity in physical education will be discussed in more detail in the interventions section of this chapter. Therefore, in order to begin to examine ways in which to promote physical activity within physical education, it is important to theoretically develop curriculum that has sound theoretical principals to enhance student's activity levels (Sallis, et al., 1997). One theoretical framework that has been popular in studies with physical education and physical activity is Social Cognitive Theory (McKenzie, 2003).

Theoretical Framework

Social Cognitive Theory (SCT) developed by Albert Bandura (1986) was the theoretical framework used for the purpose of this study. Social Cognitive Theory is derived from behaviorism, where examination of behavioral change are undertaken in the context of environmental factors, personal/ cognitive factors, and behavioral factors (Bandura, 1989; Buckworth & Dishman, 2002; USDHHS, 1996). Bandura took his idea of behavior change and concluded that the environment and the individual influenced each other in reciprocal determinism, this concept was then developed into triadic reciporality (Bandura, 1986).

Reciprocal determinism is a schematic process that demonstrates how determinants interactively act with each other (Bandura, 1986, p. 23). The model that represents reciprocal determinism is that of triadic determinism (Ward, Saunders, & Pate, 2007). In this model the three constructs include behavior, environment, and personal/cognitive factors shown in figure 2.1. The triangle in this model is meant to represent how each of these three constructs (each side of the triangle) influences each other. For example, when the environment is altered this may influence the individuals behavior and personal/cognitive factors.

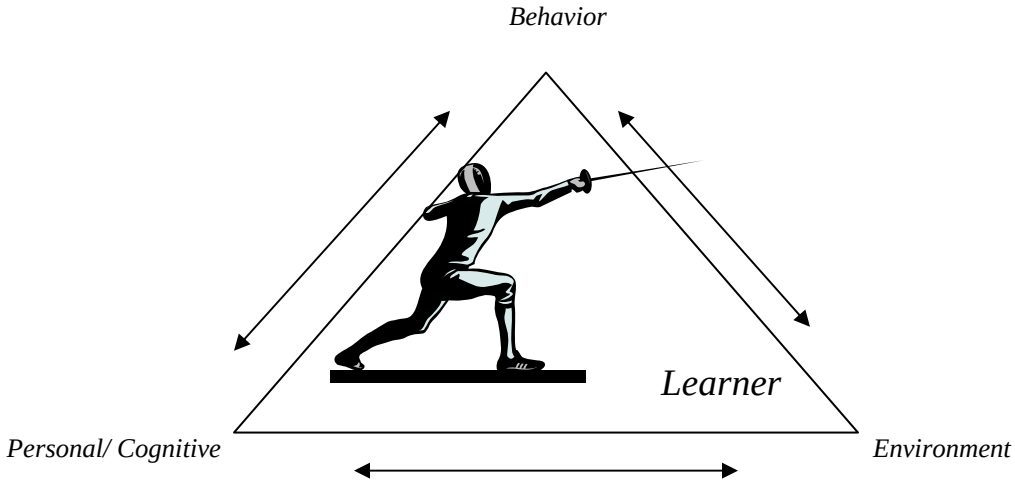

Figure 2.1 Social Cognitive Theory Triadic Determinism

The constructs for the personal/ cognitive component of SCT includes self-efficacy, expected outcomes, and coping (Bandura, 1998). A subset of these components is also social situations. One of the more important aspects of the cognitive component of SCT is self-efficacy (Bandura, 1986). Self-efficacy is how an individual judges capacities

of his/her efficacy, which in turn influences her/his motivation and behaviors and will be described in more detail in the proceeding sections of this chapter (Bandura, 1986; Bandura, 2002). Expected outcomes are the outcomes individuals perceive as a result of participating in an event (Bandura, 1986; Winters, 2001). Coping is an individual's psychological arousal and ability to cope emotionally (Ward, Saunders, & Pate, 2007, p. 26). Social situation, a sub-component of these constructs, is how students perceive their peers influence their actions (Bandura, 1986).

Another construct that is part of SCT is behavioral factors. Behavioral factors includes self-control and motor skills. (Bandura, 1986). Self-control is when individuals can control their behavior by monitoring and/or setting goals (Ward, Saunders, & Pate, 2007, p. 26). Motor skills or motor competence are the specific skills students possess to engage in an activity (Bandura, 1986; Ward, Saunders, & Pate, 2007, p. 26).

The last construct is the environmental construct that includes physical and social environments (Bandura, 1986). The social environment is the surrounding networks individuals have to support engagement in an activity (Bandura, 1986). The physical environment is where the behavior takes place (Bandura, 1986). Moreover, SCT has been used extensively in developing physical activity interventions for children (Gortmaker et al., 1999; McKenzie et. al., 2004; Webber et al., 2008) and provides a sound theoretical framework from which to develop such work. There have been a number of physical activity interventions for children in the literature (Gortmaker et al., 1999; McKenzie et. al., 2004; Webber et al., 2008). However, before moving on and discussing this body of work, it is important to examine the issue of measurement of physical activity.

Measurement of Physical Activity- Accelerometers

Over the past decade there are a number of different ways in which physical activity has been measured and includes self-report, direct observation, heart rate monitors, surveys, pedometers, indirect calorimetry, doubly labeled water, and accelerometers (Welk, 2002). However, one of the increasingly common means to measure physical activity is via accelerometers (Epstein, Paluch, Coleman, Vito, & Anderson, 1996; USDHHS, 1996; Welk, 2002). A review of measurement techniques for physical activity compared accelerometers to pedometers and heart rate monitors and found accelerometers to be the best and most reliable device to measure physical activity (Eston, Rowlands, & Ingledew, 1998, p. 362; Janz, 1994; Sirard & Pate, 2001).

Accelerometers are small noninvasive devices attached to the hip and used to record physical activity data (Epstein, Paluch, Coleman, Vito, & Anderson, 1996; Pfeiffer, Mciver, Dowda, Almeda, & Pate, 2006). Accelerometers record quality acceleration magnitudes for long periods of time (Hendelman, Miller, Baggett, Debold, & Freedson, 2000, p. 442). Accelerometers can measure different features of physical activity in epochs, which are then added together to determine activity counts (Ainsworth et al., 2000, p. 549).

The best placement of the accelerometer to accurately record physical activity data is attachment on the right hip (Ainsworth et al., 2000). Accelerometers are considered reliable and valid (Eston, Rowlands, & Ingledew, 1998; Sirard, & Pate, 2001; Welk, Steven, Kherrin, Jones, & Thompson, 2000), although some problems still exists in terms of reliability. The problem with reliability is that the accelerometer cannot consistently measure a wide range of activities, that involve upper body movement,

walking up an incline, carrying a large load (backpack), or non-locomotor movements (Welk, 2002, p. 126). Welk (2002) provided an overview of the studies that have validated and used accelerometers and they range from monitoring activity levels in the laboratory to variations in field settings. Welk (2002) concluded more research is necessary concerning accelerometers to determine differences across settings, variation across brands, measurements across different age groups, and size of participant (p. 139). Welk (2002) also stated although more research is needed concerning accelerometers, because accelerometers offer an improved technique to measure physical activity levels (p. 139).

Sirard and Pate (2001) conducted a review of research studies and described the different types of accelerometers used for school age children (p. 447). Sirard and Pate (2001) reviewed nine studies with children aged 2 to 16 years old and described the different variables, settings, participants, validity, reliability, and criterion measures of the studies they reviewed. The studies included data collected in a variety of settings from school to the laboratory and the review suggested that accelerometers were valid instruments to collect physical activity data in these different settings (Sirard & Pate, 2001). The results of this review also indicated that only three of the nine studies assessed and concluded the reliability of the accelerometer (Sirard & Pate, 2001). Studies that did not include reliability were because this was not the focus of the research study (Sirard & Pate, 2001). All brands were considered valid, and reviewed studies had high reliability, the accelerometer brands included: Actical, Actiwatch, ActiTrac, BioTrainer Pro, Tritrac-RD3, RT3, and IDEEA (Trost, Mciver, & Pate, 2005).

In order to determine the intensity of the physical activity, cut points were included in the use of accelerometers. Physical activity intensities have been validated and have been categorized as the following: <2.99 METs (light), 3.0-5.99 METs (moderate), and 6.0-8.99 METs (vigorous) and >/= 9.0 METs (very vigorous) (Freedson, & Sirard, 1998; Ott, Pate, Trost, Ward, Saunders, 2000, p. 363).

Since accelerometers are considered reliable and valid, for the purpose of this study accelerometers were used to collect physical activity data. When collecting physical activity data it is necessary to develop sound physical activity programs or interventions in order to positively influence student's activity levels. In the literature there have been a variety of physical activity interventions that have had positive influences on students and are reviewed below.

Physical Activity Interventions

There have been a variety of interventions conducted at the school level for elementary, middle, and high school. The following chart was taken from Ward, Saunders, and Pate and focuses on interventions that have been conducted with physical activity in physical education with all grades K-12 at the school level (2007, p. 84-85). The purpose of the chart is to demonstrate the types of interventions conducted, who the participants were, the participants grade, the nature of the intervention, and the targeted physical activity behavior.

Intervention	Target	Change Agent	Program Components	Physical Activity Behavior
Elementary School				
CATCH (McKenzie et al., 1996)	K-5 grades	PE teachers, cafeteria workers	Curricula, physical education, lunch, family, policy	MVPA in physical education and out of school
CHIC (Harrell, et al., 1996)	3-4 grades	Classroom teachers, PE teachers	Health curriculum, physical education	Physical activity and fitness
Eat Well Keep Moving (Gortmaker, Cheung, et al., 1999)	4-5 grades	Classroom teachers, PE, food service staff	Classroom education, physical education, food services, staff wellness, parent involvement, and promotional campaign	Increased physical activity
Go for Health (Parcel, Simons-Morton, O'Hara, Baranowski, & Wilson, 1989)	3-4 grades	Classroom teachers, PE, food service staff	Physical education curriculum, health education curriculum, food services	MVPA in physical education, out-of-school physical activity
Pathways (Caballero, et al., 2003)	3-5 grades	Classroom teachers, PE, food service staff,	Physical activity, family, food services	Physical activity
South Australia Daily Physical Education Study (Dwyer, et al., 1983)	5 grade	PE teachers	75 minutes of fitness-based physical education every day	Increased fitness

Table 2.1 Summary of Physical Activity Intervention Studies in Schools (Continued)

Table 2.1 Summary of Physical Activity Intervention Studies in Schools (Continued)

Middle School				
M-SPAN (McKenzie et al., 2004)	6-8 grades	PE teachers	Physical education curriculum	MVPA in physical education
Planet Health (Gortmaker, Peterson, et al., 1999)	6-7 grades	Classroom teachers in math, science, language arts, social studies, PE teachers,	Classroom and physical education	MVPA
TAAG (Webber, et al., 2008)	6-8 grades	Classroom teachers, PE teachers, community agent staff	Classroom, physical education promotion, and programs with community agencies	MVPA
High School				
LEAP (Pate et al., 2005)	high school females	Classroom teachers, PE teachers, school staff	Physical education, health education, health promotion for staff, health services, family community involvement, and healthy environment	MVPA in physical education and out of school

Table 2.1 Summary of Physical Activity Intervention Studies in Schools

*Note** Taken from Ward, Saunders, Pate, 2007, p. 84-85

Data from the chart helps to understand not only program components for physical activity intervention but also the types of interventions undertaken at the different levels. Table 2.1 shows there have been six elementary studies (Caballero et al., 2003; Dwyer et al., 1983; Gortmaker, Cheung et al., 1999; Harrell et al., 1996; McKenzie et al., 1996; Parcel, Simons-Morton, O'Hara, Baranowski, & Wilson, 1989), three middle school studies (Gortmaker et al., 1999; McKenzie et. al., 2004; Webber et al., 2008) and one high school study (Pate et al., 2005) for a total of ten studies conducted at the K through 12 level in physical education. From this summary of studies it is apparent there is a need to conduct more studies at the middle and high school levels, since this age of students are particularly vulnerable for lower physical activity levels (McKenzie, 2003).

The change agent for these studies included a variety of individuals from physical education teachers, to classroom teachers, school staff, community agent staff, and cafeteria workers. Program components also varied and included food services, staff wellness, parent involvement, promotional campaign, health education curriculum, physical activity, physical education curriculum, classroom activities, and programs within the community. Research from these intervention studies indicates there are many ways to promote physical activity at the school level. Therefore, when developing interventions it is important to not only understand the population, but the type of change agent for the behavior because this has the most influence on increasing activity levels for the population being researched.

The interventions in Table 2.1 also included a variety of different goals relative to physical activity behavior such as increasing MVPA in physical education, increasing MVPA out of school, promoting physical activity, and promoting out-of-school physical

activity. Again when developing physical activity interventions, it is important to first determine the goal of the intervention, the type of physical activity levels to be increased based on the program goals. By using this chart it aided in the conceptualization of the current research study. Since there have been limited studies at the middle school level, the research that has been conducted and aimed at promoting physical activity in middle school physical education will be examined.

Middle School Physical Activity Interventions

MSPAN was the first middle school intervention based on SCT that aimed to implement and assess a program to increase physical activity in physical education (McKenzie et. al., 2004, p. 1382). Participants were from 24 middle schools and were either assigned to an intervention (N = 12 schools) or a control (N = 12 schools) group (McKenzie et. al., 2004, p. 1382). The intervention group received professional development for staff, provision of curriculum materials in physical education and health, and on site follow ups, while the control group had their regular physical education and health classes (McKenzie et. al., 2004, p. 1382).

Baseline data revealed significant gender differences in physical activity within middle school physical education with boys being more active than girls (McKenzie 2003, p. 215). Over the intervention there were no significant differences in lesson length between the control and experimental groups. There were significant (p= 0.02) differences in the time students spent in MVPA (3 min/ lesson) between the experimental and control groups (McKenzie et al., 2004, p. 1384). In the second year of the intervention, findings revealed that in the experimental schools MVPA increase 18%,

from the start to the end whereas the control schools only improved 3% (McKenzie et al., 2004, p. 1384).

Another study that was conducted at middle school based on SCT was the Trial of Activity for Adolescent Girls (TAAG). The TAAG program assessed female's physical activity levels in physical education (Webber et al., 2008). Participants were 1027 students, in 36 diverse schools, enrolled in either co-ed or same sex physical education (McKenzie et al., 2006). Primary goals of the intervention were to increase physical activity levels. Secondary goals were to examine body fat percent, school and community effects, and differences in physical education and physical activity after school (Webber et al., 2008).

One target goal concerning physical activity was to increase MVPA in physical education to 50% of the lesson. This goal was attempted by training teachers, having training sessions that included class management, providing activities to increase girls MVPA, and choosing appropriate curriculum to increase activity levels (Webber et al., 2008, p. 175). To reach the secondary goals teachers were given health lessons for physical and heath education class. In addition, to increase physical activity levels out of school, program staff partnered with local agencies to develop programs for the participants.

Results from baseline TAGG indicated that the student's MVPA was 37.9% of the lesson, with 13.1% of the lesson spent in VPA (McKenzie et al., 2006). The results from the intervention indicated females in the intervention, had 1.6 minutes longer of physical activity during the week (Webber et al., 2008, p. 173). Moreover, findings also indicated that body fat and fitness levels did not change with the experimental and control

students (Webber et al., 2008, p. 173). Thus, the overall findings from this study were relatively weak.

Another study conducted at the middle school level, based on SCT was Planet Health. Planet Health was conducted over a two year period and included a health and physical education component using math, social studies, language arts, and science (Gortmaker et al., 1999, p. 409). Participants (*N*=1295) were from 10 schools with diverse backgrounds and students were in 6^{th} and 7^{th} grade. Of the ten schools, five were assigned to the experimental group that received the Planet Health curriculum and five were assigned to the control group that received the regular physical education and health curriculum. The study focused on a variety of activities for fitness and wellness sessions, training of teacher staff, and materials for physical education (Gortmaker et al., 1999, p. 411).

The physical education component of the intervention included giving teachers materials to enhance their teaching in physical education. Materials the physical education teacher received included ways to develop goals, ways to increase physical activity, and different choices to improve MVPA (Gortmaker et al., 1999, p. 411). The lessons that the teachers implemented had micro units, which included goals and self fitness assessments (Gortmaker et al., 1999, p. 411).

Results indicated that obesity levels among females were reduced in the experimental group (23.6% to 20.3%) when compared to the control group, whose obesity levels increased (21.5% to 23.7%) (Gortmaker et al., 1999, p. 413). Although, in both the intervention and control group male obesity levels decreased (Gortmaker et al., 1999, p. 413). Other secondary variables studied indicated, intervention students

decreased television viewing and increased fruit and vegetable consumption (Gortmaker et al., 1999, p. 417).

Overall the physical activity interventions implemented in the literature aim to increase activity levels by changing the way physical education was taught. From changing lesson plans to training teachers, difference resulted in positive changes to the experimental groups (Gortmaker et al., 1999; McKenzie et al., 2004; Webber et al., 2008). By changing the physical education component, physical activity levels were increased and obesity levels decreased. Despite the positive findings in the intervention literature many of the findings did not yield strong interventions effects (Bouchard, 2000; Ward, Saunders, & Pate, 2007).

After reviewing the results from middle school physical activity interventions, the findings coincide with what the literature has said about physical activity. These include the conclusion that girls are less active than boys (Bouchard, 2000, p. 214l; McKenzie et al., 2004). Increases in physical activity levels were also found as a result of a physical activity intervention (McKenzie et al., 2004; Webber et al., 2008). Finally, implementing a physical activity intervention can result in lower obesity levels, TV viewing, and food intake (Bouchard, 2000; Gortmaker et al., 1999).

Clearly interventions do have an impact on an individual's health (Gortmaker et al., 1999; McKenzie et. al., 2004; McKenzie et al., 2006). Although schools themselves cannot and should not be expected to address the nation's most serious health problems in isolation (CDC, 2007); physical activity interventions within the context of physical education are one way in which changes can be made with youth activity levels. There have been limited physical activity programs implemented in middle schools. Therefore it

is necessary to strive forward to make a difference in impacting youth physical activity levels in and out of schools because the school is an optimal place to influence activity levels (McKenzie et al., 2004).

As researchers begin to develop physical activity interventions for youth, they must be conscious of the fact that changing physical activity behaviors is a complex process and physical activity does not happen in isolation. As SCT suggests, there are many factors that influence physical activity such as those identified under the personal/cognitive, behavioral and environmental constructs of SCT. For the purposes of this study, the following variables were identified as those variables most likely to impact a physical education physical activity intervention: motor competence (Stodden et al., 2008), self-efficacy (Bandura, 1986), social situation (Winters, 2001), and outcome expectancy values (Winters, 2001). Thus, the final section of the literature review will examine secondary variables associated with physical activity.

Secondary Variables Associated with Physical Activity

Behavioral Factors- Motor Competence

According to SCT, a component of behavioral capability is motor competence. Motor competence is a student's ability to perform a specific skill or an activity in a specific situation (Stodden et al., 2008). Motor competence is important because with the right kind of practice, students improve their skill levels (Rink, 2006; Schmidt & Wrisberg, 2004). Motor competence is not only influenced by skill but also a student's previous experiences engaging in the activity (Bandura, 1986). Thus if students have more opportunities to engage in appropriate motor skill practice, then they will more likely have a higher skill level, which in turn may increase their physical activity levels

(Dylan, Wilsona, Okelya, Micklec, & Steelea, 2007; Pangrazi & Dauer, 1992; Wrotniak, Epstin, Dorn, Jones, & Kondilis, 2006). Moreover, when students are successful in learning an activity, they are more motivated and an increase in motivation leads to increases in physical activity levels (Bandura, 1998; Stodden, Langendorfer, Roberton, & Kelbley, 2007). Motor competence has been typically studied with younger populations (Goodway & Branta, 2003; Goodway & Rudisill, 1997) using scales such as Test of Gross Motor Development-2 (TGMD-2). There is a strong body of literature on examining motor competence in children related to fundamental motor skill development (Rink, 2006; Schmidt & Wrisberg, 2004; Stodden et al., 2008).

However, when one examines the literature on motor competence with more sports specific skills there are no standardized instruments to provide normative data on older children. What is typically used with this age group and in these settings are some kind of scoring rubric or task sheet to examine if a child performed specific critical elements of the skill (Rink, 2006; Siedentop, 2007). There is limited data that has examined the role motor competence plays in the context of a physical activity intervention. More research needs to look at this issue (Rink, 2006) and thus, the current study examined motor competence as a secondary dependent variable.

Personal/ Cognitive Factors - Self-Efficacy

Self-efficacy is a belief an individual has about themselves and their ability to engage in a specific task in a specific situation (Bandura, 1986). When students perform a skill, a large part of their performance is influenced by the extent to which they believe they can be successful in performing that skill in the specific context (Bandura, 1986, p. 434). Over time, children who are successful in applying their skills in different contexts

will develop higher levels of self-efficacy, while those students who are not successful will develop lower levels of self-efficacy (Stodden et al., 2008). Ultimately, lower levels of self-efficacy will lead a child to drop out of that activity as it is not intrinsically rewarding to him or her (Bandura, 1986). Thus, self-efficacy plays an important role in influencing physical activity levels. One research study conducted to determine influences in activity levels and self-efficacy was by Strauss, Rodzilsky, Burack, and Colin (2001). Strauss, Rodzilsky, Burack, and Colin (2001) found that self-efficacy was highly correlated with physical activity levels. This study included 92 children from 10 to 16 years old. The students were measured for seven days with an accelerometer, and completed questionnaires to determine anxiety, self-efficacy, social influences, self-esteem, health beliefs, and time in sedentary activity (Strauss, Rodzilsky, Burack, & Colin, 2001). Results indicated that high activity levels were correlated with high levels of self-efficacy, social influences, and increases in self-esteem (Strauss, Rodzilsky, Burack, & Colin, 2001).

Perceived self-efficacy is important in physical education as it relates to physical activity levels, because this also influences motivation and actions (Bandura, 1998, p. 623). If individuals have a high self-efficacy, then they will be more likely to be motivated to engage in physical education class (Ward, Saunders, & Pate, 2007).

The typical way that self-efficacy has been measured in a number of studies has been the use of questionnaires (Dempsey, Kimieclk, & Horn, 1993; Ryan & Dzewaltowski, 2002; Strauss, Rodzilsky, Burack, & Colin, 2001). In these questionnaires a student typically responds to a series of statements like “I am confident I can engage in

physical activities" and indicates the degree to which she/he agrees with the statement on a likert scale (USDHHS, 1996).

As self-efficacy is considered situation specific (Bandura, 1986; Feltz & Magyar, 2006) it was believed important to use a self-efficacy scale that was specific to the two activities involved in this study, namely dance and floor hockey. No self-efficacy scales were found in the literature for dance or floor hockey, thus the researcher developed her own scale using various principles from other scales. Typically, self-efficacy scales have been studied have used a likert scales and included goals specific to the intervention, students ability to complete the goals, and ask about the relation to the engaged activities (Feltz & Magyar, 2006). Aside from self-efficacy scales another important influence to physical activity levels that is necessary to measure is the social situation in which students are active.

Personal/ Cognitive Factors - Social Situation

Social situation is how students perceive they are situated by their friends to participate in a particular activity (Bandura, 1994). When discussing social situations, the social activities individuals engage in influences a students' activity level (Sallis, Grossman, Pinski, Patterson, & Nader, 1987, p. 825). Social situation are important at the middle school level, because peers are influential on daily activities (Bandura, 1989; Berk, 2003; McKenzie et al., 2006) and typically students interact with peers who have similar interests (Urberg, 1999).

Social situation has been measured via questionnaires and interviews (Anderssen & Wold, 1992; Sallis, Grossman, Pinski, Patterson, and Nader, 1987; Slavy et al., 2007; Strauss, Rodzilsky, Burack, & Colin, 2001). A recent study was conducted by Slavy et al.

(2007) and included 20 13 year old boys and girls. The students in the study self-reported for seven days their activity levels, intensity, and if they were with someone while participating in the activity (Slavy et al., 2007). Findings indicated higher intensity physical activity levels when students were with friends, while overweight children were more likely to spend time alone. A cautionary note to this finding is that physical activity was not measured directly but was self-reported.

Another study looked at different levels of peer support with 13 year old children (Anderssen & Wold, 1992). This study included adolescents (*N*=904) who completed a survey about peer support and parent support to engage in physical activities. Findings indicated that a student's peers influenced her/his perceived value and their support for engagement in physical activities (Anderssen & Wold, 1992).

Sallis, Grossman, Pinski, Patterson, and Nader (1987) validated a social support for physical exercise scale. The scale was undertaken with 40 participants with a mean age of 36 years. The study intercorrelations within the instrument ranged from *r*= 0.38-0.45 (Sallis, Grossman, Pinski, Patterson, & Nader, 1987, p. 825). Reliability data for the test and retest of all the scale ranged from *r*=0.55-0.86 and internal consistency was *r*= 0.61-0.91 (Sallis, Grossman, Pinski, Patterson, & Nader, 1987, p. 825). The data for friend support indicated a mean of 13.6, *SD*= 5.3, test-retest reliability (*N*=52) was 0.79, and coefficient alpha (*N*=171) was 0.84 (Sallis, Grossman, Pinski, Patterson, & Nader, 1987, p. 825). A modified version of the Sallis, Grossman, Pinski, Patterson, and Nader (1987) social support scale was used for this study. Another influence on activity levels is outcome expectancy values.

Personal/ Cognitive- Outcome Expectancy Values

Outcome expectancy values are student's perception a given behavior will occur as a result of engaging in a specific activity (Wilcox, Castro, & King, 2006, p. 66; Winters, 2001, p. 116). Bandura (1986) described outcome expectancy as a judgment of consequence that a specific behavior produces, thus influencing outcomes individuals' experience (p. 391-392). For example, if a student in physical education expects to get physically fit during class, this will lead to participation in positive behaviors towards becoming physically fit. Although, students may know that being physically active will lead to positive health. Another important part of this construct is the extent to which he/she values this outcome (Winters, 2001). Thus, outcome expectancy values includes a combination of the expected outcome of an event and the value an individual places on that outcome (Bandura, 1986; Winters, 2001). For example, a student may know physical fitness is an outcome of a physical education class, but if she/he does not care about this outcome then he/she will not engage in the behaviors to achieve the outcome and would have low outcome expectancy values towards the activity.

Outcome expectancy values have been evaluated via questionnaires (Hortz, Winters, Petosa, & Grim. 2007; Winters, 2001). Hortz, Winters, Petosa, and Grim (2007) used an outcome expectancy scale that was similar to the developed scale by Winters (2001), that modeled outcome expectations. Prior to data collection face and content validity was established by a two round panel of experts. Researchers conducted the study to determine if outcome expectancy values influenced physical activity levels (Hortz, Winters, Petosa, & Grim, 2007). The participants in the study were 607 college students in a health education class. To determine physical activity levels the seven day

recall was administered to the students. Results indicated that outcome expectancy values moderately influenced physical activity levels (Hortz, Winters, Petosa, & Grim. 2007). Outcome expectancy values have the potential to predict activity levels, thus this secondary dependent variable was explored during the current study. A modified version of Winters (2001) scale was used to determine outcome expectancy values in a dance and a floor hockey unit.

BMI

Body Mass Index (BMI) is a parameter that was studied and reported as descriptive data. Body Mass Index is a measurement relative to body fat and can potentially predict future health risks (Pietrobelli et al., 1998). The Centers for Disease Control and Prevention has identified a range of BMI scores that constitute "healthy weight" for children of different ages and genders (CDC, 2007). Children in 6^{th} grade typically range in age from 11 to 12 years of age although some children may have been held back a grade and may be 13 years of age. Healthy BMI for an 11 year old female is considered 14.2 to 20.7, while healthy BMI for an 11 years old male is from 14.5 to 20 (CDC, 2007). Healthy BMI for 12 year old female is 14.8 to 21.7, and is 15 to 21 for males of the same age (CDC, 2007). Healthy BMI for 13 year old female student is 15.5 to 22.5, while healthy BMI for males is 15.5 to 21.5 (CDC, 2007). BMI has been related to physical activity levels and typically individuals with lower BMI engaged in more physical activities (Bouchard, 2000; CDC, 2007; Gortmaker et al., 1999; Trust for America's Health, 2007; USDHHS, 1996). BMI was taken and reported as a descriptive statistic in this study, as this may have influenced activity levels.

Conclusion

Theoretical foundations are necessary for successful interventions (Ward, Saunders, & Pate, 2007, p. 28). Social Cognitive Theory can be used by researchers to develop interventions within the context of physical education that not only promotes more physical activity and MVPA, but also engage students in activities to improve motor competency and increase self-efficacy. Additionally, SCT can assist in developing instructional strategies to promote peer support of physical activity (social situation) and enhance outcome expectancy values of the activity. Within the current study, SCT was used to guide the development of the dance physical activity intervention and implement instructional strategies to promote motor competence, self-efficacy, social situation and outcome expectancy values.

Gaps in the Literature

Based on the declining activity levels of children, it is clear that more research needs to be conducted in the area of physical activity interventions, specifically in school settings (McKenzie, 2003; USDHHS, 1996). As interventions are developed, it is essential to recognize that different ages, ethnic, and economic groups may experience greater improvements if programs are tailored specifically to their needs (Boon & Clydesdale, 2005). There are limited studies on middle school physical activity interventions (Gortmaker et al., 1999; McKenzie et. al., 2004; McKenzie et al., 2006; Webber et al., 2008). Of those studies conducted, many have had weak effect sizes, and it is not known if the results are because of poor intervention implementation and/or programs, or other factors (Baranowski, Anderson, & Carmack, 1998; Stone, McKenzie, Welk, & Booth, 1998; USDHHS, 1996). Specifically, more work needs to be conducted

with under represented and at risk groups such as African American children from low income and disadvantaged environments (USDHHS, 1996). Researchers and teachers need to find ways in which to engage these children in activities that are motivating to them and provide opportunities for high levels of physical activity. Research also needs to be conducted to determine how motor competence, self-efficacy, social situations, and outcome expectancy values influences student's physical activity levels within physical activity interventions. Currently, there is little empirical work in these areas to guide the selection of physical education curriculum.

Summary

This research study is necessary because it provides a variety of benefits within the research field. Based on the evidence presented above, it is clear that physical activity in young adolescents is low (Gortmaker et al., 1999; McKenzie et. al., 2004; McKenzie et al., 2006; Webber et al., 2008). Many federal organizations have realized that this is a growing concern and changes need to be made, therefore provide guidelines to follow to increase physical activity levels (AAHPERD, CDC, & USDHHS). This study aimed at increasing physical activity levels with poor, African American adolescents from disadvantaged communities. Since physical activity is lower with these "at risk" populations (Gortmaker et al., 1999; McKenzie et. al., 2004; McKenzie et al., 2006), thus these participants would have the greatest benefits than any other group of students by participating in a physical activity intervention.

The school has also been identified as a place to intervene, and school physical activity interventions have been successful in increasing physical activity levels (Ward, Saunders, & Pate, 2007). There are a number of secondary variables that influence

physical activity levels and include motor competence, self-efficacy, social situation, and outcome expectancy values and need to be considered when investigating physical activity interventions. Although, there is still much to learn about promoting physical activity levels in context of schools, physical education curriculums are necessary to examine because changes can increase physical activity levels especially with disadvantaged youth (Gortmaker et al., 1999; McKenzie et. al., 2004; McKenzie et al., 2006; Webber et al., 2008).

CHAPTER 3

METHODS

Introduction

The primary purpose of this study was to determine the physical activity levels of middle school students in two different instructional units (dance and floor hockey). The secondary purpose of this study was to determine the influence of a dance and floor hockey unit on motor competence, self-efficacy, social situation, and outcome expectancy values. This chapter includes the theoretical framework, the research setting, participants, variables, instrumentation, procedures, and data analysis.

Theoretical Framework

This study was theoretically situated within social cognitive theory (Bandura, 1986). Social cognitive theory (SCT) is one of the most widely used theories for youth physical activity programs (USDHHS, 1996; Ward, Saunders, & Pate, 2007, p. 24). This theory "specifies a core set of determinants, the mechanism through which they work, and the optimal ways of translating this knowledge into effective health practices" (Bandura, 2002, p. 144).

Social cognitive theory contains reciprocal determinism, which is viewed through the triadic reciprocality model (Bandura, 1986). This model describes three broad areas of constraints (Bandura, 1986). These constraints include cognitive or personal factors

(e.g. perceived self-efficacy, outcome expectancy, and coping), behavioral factors (e.g. self-control, and sports skills/ motor competence), and environmental factors (e.g. social and physical) (Bandura, 1986; USDHHS, 1996).

This section will describe those parts of social cognitive theory utilized in the present study. Within the confines of the present study, the environment was not a targeted area to change, thus, this measure was not included.

Behavioral Factors

Under the area of *behavioral factors,* the present study identified the motor competence of the participants as being of central importance to sustaining physical activity behaviors (Stone, McKenzie, Welk, & Booth, 1998). Motor competence was determined by evaluating the participant's dance and floor hockey competence prior to and following the unit of instruction. Motor competence was included in the study as there is little research with youth physical activity interventions related to this measure (Stone, McKenzie, Welk, & Booth, 1998, p. 309).

Personal/Cognitive

The *personal/cognitive* factors incorporated in the present study included motor competence, self-efficacy, social situation, and outcome expectancy values as personal constraints that influence physical activity levels. Self-efficacy is a child's perception of her/his ability based on the ability of others around him/her (Bandura, 1993, p. 120) and is believed to be highly correlated with physical activity levels (Dishman, et al., 2004).

Social situation is a construct of outcome expectancy (Bandura, 1986). Social situation applied to SCT is when a student believes his/her peers support her/him to participate in a particular activity (Bandura, 2004). Social situation is important to SCT

and this study because student's social networks influence their participation in an activity (Bandura, 2002).

Outcome expectancy values are the individual's perceived expected outcomes of participating in physical activities (Bandura, 2004, p. 144). Outcome expectancy is important to SCT because individuals act on their expectancies based on their beliefs about producing an action (Bandura, 2001, p. 10). Outcome expectancy is believed to be important to this study because outcome expectancy influences physical activity levels (Dishman et al., 2004; Motl et al., 2002).

Research Setting

The study took place at a middle school within a large urban school district in central Ohio. The school district report card showed the district had met 5 out of the 30 state indicators and was identified as in need of continuous improvement (Ohio Department of Education, 2006-2007). There were 53,674 students in this district and 62% were African American, 5.2% were Hispanic, and 28.4% White; while 73.3% of the students were economically disadvantaged (Ohio Department of Education, 2006-2007). The overall performance indicator score was 80.5 points out of a total 120 (Ohio Department of Education, 2006-2007). Additionally, in the pervious year 52.9% of 6th graders in the district were at or above proficient level on reading and 50.4% of the 6th graders were proficient in mathematics (Ohio Department of Education, 2006-2007).

The middle school where this study was conducted was designated by the state department of education as in a state of "academic emergency" and had not met any state indicators (Ohio Department of Education, 2006-2007). There were 546 students at this middle school and 68.8% were African American, and 28.6% white; while 92.3% of the

students were economically disadvantaged (Ohio Department of Education, 2006-2007). The overall performance indicator score was 65.2 points out of 120 (Ohio Department of Education, 2006-2007). Additionally, in the pervious year 34.4% of 6th graders were at or above proficient level on reading and 40.5% of the 6th graders proficient in mathematics (Ohio Department of Education, 2006-2007).

The school was selected for this study because the physical education teacher had a long history of working with faculty in the physical education teacher education program at a local university. The physical education teacher also had a reputation of having a quality physical education program and as such, the investigators wanted to conduct the study in a school that had quality physical education.

Physical Education Program

The students at the middle school had physical education for one semester each year during 6th, 7th, and 8th grade. The first semester started at the beginning of the school year and went until the middle of January for a total of 21 weeks. The second semester started in January and went to the end of the school year. The physical education curriculum included a variety of activities to which the students were exposed daily. Most of the units were approximately 10 days long. Prior to the implementation of the dance and floor hockey unit that was part of the current study, the students participated in the following activities:

Week 1- expectations, routines, warm up activities, and cooperative games

Week 2- cooperative activities

Week 3-5 ultimate Frisbee/team handball

Week 6-8 soccer

Week 9- cooperative games

Week 10- Volleyball

The teacher indicated she followed national standards for physical education (NASPE, 2004) and strived to have students meet cognitive, psychomotor, affective, and fitness goals.

Sixth grade was selected for this study because of the limited literature with this age group and the fact that sixth grade marks the transition from childhood to adolescence where decline in physical activity is often demonstrated (McKenzie et al., 2006; National Youth Behavior Survey, 2005; USDHHS, 1996). The students in this study had not been exposed to dance while in middle school and many students anecdotally reported they had limited experiences participating in organized dance during their elementary physical education program.

For the purpose of this study, three physical education classes were used. Class one was 45 minutes long, class two was 46 minutes long, and class three was 42 minutes long. All classes attended physical education everyday for one semester. The school gymnasium had a variety of equipment for the students and included a radio, hanging bar, two basketball hoops, soccer balls, volleyballs, basketballs, rackets, birdies, frisbees, nets, pucks, floor hockey sticks, bats, jump ropes, mats, and media equipment.

A typical class period in physical education consisted of the students entering the gymnasium and reading the board that listed the daily activities. Students would then start the warm-up instructed on the board. The teacher would then bring the students together and explain the task for the day. Then throughout the lesson, the teacher would walk

around and give students specific feedback. At the end of the lesson, the teacher would then again, bring students into a group for lesson closure and review.

Participants

There were 53 students who participated in the study from three physical education classes; class one (*n*=19), class two (*n*=15), and class three (*n*=19). There were 83 percent African American participants (*n*=44), 17 percent White (*n*=9), 72 percent male (*n*=38), and 28 percent female (*n*=15). All the students in the study were in the 6th grade and taught by the same female physical education teacher and substitute teacher. The overall the mean age of students was 11.89 years (*SD*=.677); in class one the mean age was 12.04 years (*SD*=.668), in class two the mean age was 11.84 years (*SD*=.801), and in class three the mean age was 11.77 years (*SD*=.595).

Additionally, the physical education teacher was considered a participant in the study in that she was involved in developing and delivering the dance and floor hockey units of instruction. The regular physical education teacher that taught the dance lessons and two floor hockey lessons was an African American female with 14 years of teaching experience. This teacher self-reported her favorite lessons to teach were the ones in which students got excited to do the activity. The teacher also enjoyed lessons where students started the unit with little content knowledge and at the conclusion of the unit, the students enjoyed and gained confidence in the activity. Her favorite content areas to teach were ultimate frisbee, tumbling, volleyball, dance, jump rope, and track and field. The physical education teacher had previously been an elementary physical education teacher and this was her third year teaching middle school physical education at this school.

During the study the physical education teacher injured her knee and ended up being absent for a portion of the floor hockey unit due to knee surgery. She was replaced by a licensed physical education teacher who was her substitute during this time. The substitute teacher was an African American male, who previously taught high school physical education for 15 years. His favorite lessons to teach were flag football, ultimate frisbee, and pickle ball, while he was most knowledgeable about basketball and ultimate Frisbee. He said he really enjoyed teaching when student learning occurred. The substitute teacher taught nine of the 11 floor hockey lessons using the lesson plans developed by the regular physical education teacher. The substitute physical education teacher had regular conversations with the typical physical education teacher about what was to be covered each day.

Identification and Justification of Variables in the Study

Primary Dependent Variables

The primary dependent variable studied was moderate to vigorous physical activity levels (MVPA) as measured by: 1) average activity counts per lesson; 2) the percent of lesson time spent in MVPA per lesson; 3) average activity counts during a ten minute bout of dance in the dance unit or game play during the floor hockey unit; and 4) the average number of minutes of MVPA during a ten minute bout of dance in the dance unit or game play during the floor hockey unit. These variables were important because increases in physical activity are national health goals (McKenzie et al., 2006; Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hara, 1991) and are associated with decreases in obesity and increases in a healthy lifestyle (Story, Kaphingst, & French, 2006, p. 131). Although the primary dependent variable for this study was physical

activity, current research has suggested that physical activity is mediated by a number of factors (Gortmaker et al., 1999; McKenzie et al., 2006; McKenzie, Sallis, Prochaska, Conway, Marshall & Rosengard, 2004; Pate, Ward, Saunders, Felton, Dishman, & Dowda, 2005), thus secondary dependent variables were also measured.

Secondary Dependent Variables

From a theoretical perspective, a number of secondary variables were tracked because they had the potential to assist in interpreting and explaining the data on physical activity. These variables were motor competence (dance and floor hockey competence), self-efficacy (dance and floor hockey), social situation (dance and floor hockey), and outcome expectancy values (dance and floor hockey). An explanation of each variable's importance to the study is provided below.

From a SCT perspective, motor competence was considered to represent the student's behavioral capability in an activity. In the context of this study, behavioral capability was defined as the student's actual competence in dance skills or floor hockey skills. Motor competence was important to measure because physical activity may be mediated by a student's skill level in a specific activity.

Another secondary variable was dance and floor hockey self-efficacy, which was a student's belief about their ability to participate in an activity and be successful (Ward, Saunders, & Pate, 2007, p. 26). This was important to physical activity, as studies of physical activity have found that physical activity levels are highly correlated with a student's perceptions of self-efficacy (Bandura, 1993; Dishman et al., 2004; Newmark-Sztainer, Story, Hannan, Stat, & Rex, 2003).

Another secondary variable was social situation, which was the support student's had from their peers to engage in a specific activity. Social situation was important because in middle school students begin to focus more on what their peers think and are involved in, which can influence decisions or behaviors in physical education (Lindsay, Sussner, Kim, & Gortmaker, 2006, p. 171). Also, studies of physical activity have suggested that absence of a supportive social situation is tied to lower levels of physical activity levels (Dishman et al., 2004).

Another secondary variable was outcome expectancy values, which was the students ability to know what behaviors were appropriate and if they valued these behaviors (Bandura, 1986). This was significant because a student's outcome expectancy values and the extent to which she/he values these behaviors influences his/her ability to engage in physical activities and live a healthier life (Phongsavan, McLean, & Bauman, 2007).

BMI

Body mass index was also measured as a descriptive variable and was necessary to measure because body mass index can influence students' physical activity levels (CDCP. 2007; Story, Kaphingst, & French, 2006; USDHHS, 1996), thus BMI was measured and reported as a descriptive variable.

Independent Variable

The independent variables in this study were the two physical activity interventions – the hip-hop dance and floor hockey unit. Lesson plans for both units of instruction were theoretically developed to focus on changing the dependent variables identified above. The lesson plans were developed from a SCT perspective and included

activities that focused on: 1) modeling behaviors from peers, 2) modeling behaviors from teachers, 3) modeling from media sources such as videos; 4) planning instructional environments in which peers worked together to provide social support to each other; 5) maximizing opportunities for physical activity during the lesson, and; 6) increasing motor competence, self-efficacy, social situation, and outcome expectancy values.

Instrumentation

Physical Activity - Accelerometers

The instrumentation used to collect physical activity data were accelerometers. An accelerometer is small, noninvasive device attached to the hip used to record overall movement (Epstein, Paluch, Coleman, Vito, & Anderson, 1996; Welk, 2002, p. 125) of body accelerations (Sirard & Pate, 2001, p. 445). According to Welk (2002) an accelerometer measures the acceleration change in "velocity over time," which is gravity changes or known as ($g=9.8$ m/ s ^{2} or 32 ft/ s ^{2}; p. 125).

Accelerometers measure physical activity by measuring the frequency (number of bouts above the criterion level), the intensity (average counts per day or interval), duration (number of minutes greater than the criterion level), and energy expenditure (estimates from the calibration equation) resulting from physical activity (Freedson, Melanson, & Sirard, 1998; Melanson & Freedson, 1995; Welk, 2002, p. 132). By using these measurements, accelerometers can measure different features of physical activity such as light, moderate, and vigorous physical activity.

The accelerometers used for this study were Acticals made by mini mite and prior to the start of this study the manufacturer calibrated the accelerometers using a standard protocol to ensure reliability of measurement (Esliger & Tremblay, 2006). To calibrate

the accelerometers the devices were placed on a hydraulic shaker table controlled by an "electrohydraulic servo valve with cylinder-position feedback" (Esliger & Tremblay, 2006, p. 2174). Once placed on the table the accelerometers were shaken for different speeds and at different times.

Once returned from the manufacture the accelerometers were calibrate for the study and set at 61 inches and 100 lbs since this was the average height and weight for 6th grade male and females during data collection (CDCP, 2007). The accelerometers were calibrated to collect data for a 60 second epoch during the lesson (Maddison et al., 2007; Penpraze et al., 2006).

To accurately record physical activity data, accelerometers were attached to the right hip of each participant (Ainsworth et al., 2000; Ott, Pate, Trost, Ward, Saunders, 2000; Welk, 2002) by clipping it onto their waist using the elastic belt that comes with the accelerometer (Swartz et al., 2000). In this study, students were assigned an accelerometer number in order for the same accelerometer to record the data from the same participant each day. Students were instructed on how to clip the belt around their waist prior to the study beginning. Each day, the investigator checked for accuracy of accelerometer placement. Once the lesson was complete, students took off their accelerometers by unclipping their elastic belt and returned them to the researcher.

Following the lessons, the researcher downloaded the activity data onto a computer with the appropriate program to determine activity counts. Activity counts were taken for each 60 seconds (Swartz et al., 2000) during the lesson. There were three back-to-back classes, thus it was not possible to download the accelerometer data in between lessons. Therefore, the researcher recorded the time each lesson started and then saved a

week worth of data into separate accelerometer files for each of the three classes based on the time their lesson started. Each data file that resulted from the student's participation was saved with the students ID and date in a password-protected file for further data analysis.

In order to determine the intensity of the physical activity, cut points were determined and applied to these data. The validated intensity values of physical activity were categorized at: <2.99 METs (light), 3.0-5.99 METs (moderate), and 6.0-8.99 METs (vigorous) and >/= 9.0 METs (very vigorous) (Freedson, & Sirard, 1998; Ott, Pate, Trost, Ward, Saunders, 2000, p. 363). Then to determine the percent of time in MVPA the amount of counts that exceeded 3.0 and higher were coded (Freedson, Melanson, & Sirard, 1998).

Using the accelerometer data, four different measures of physical activity were utilized in the study: 1) physical activity counts/min for the entire lesson, 2) percent of MVPA per lesson, 3) average activity counts in last ten minutes of the lesson and, 4) average number of MVPA counts in last ten minutes of the lesson.

As the three classes in the study had different lesson lengths it was decided to normalize these data and calculate total physical activity counts per minute for the lessons. Physical activity counts per minute for the entire lesson were calculated by adding up the number of activity counts for the length of the lesson each day, then dividing this number by the number of minutes in the lesson. The counts per minute for each lesson were totaled and divided by the number of lessons students attended to result in the final score.

The mean percent of lesson time spent in MVPA were calculated by adding up the number of times the student exceeded the cut point of three (the cut point for MVPA) for the length of the lesson. Then a total percent score was calculated and was divided by the number of lessons the student attended.

Physical activity counts per the ten-minute session were calculated by adding up the number of activity counts for the ten minutes of each lesson creating a total score. Once this was calculated total activity counts were divided by ten minutes, and this score was divided by the number of lessons the student attended. This created a total score for physical activity counts per minute for the last ten minutes.

Average number of MVPA counts in last ten minutes of the lesson were calculated by adding the number of times a students exceeded the cut point of 3.0 METs, then this number was divided by ten minutes, and then this was again dividing by the number of lessons the student attended.

Motor Competence (Behavioral Capability)

Dance Motor Competence

To measure dance motor competence, students were evaluated by a researcher-developed rubric (Appendix J). Skills students had to perform were walking, sliding, tapping, and their ability to free style along to the beat of music. There were a total of four items evaluated for the dance unit (Appendix J). These skills were graded with the opening choreography of the dance and were posttested by grading the same choreography. Each item for the dance score was worth one point and students could score a total of four points.

For each item students were scored by giving them a one if they completed the move correctly and a zero if they did not complete the move correctly equaling in a total score ranging from zero to four. For each of the items performance criteria were developed (Appendix J). An example of one of the four items students were evaluated on where they could score a one or zero is as follows:

Third 8 counts

a. Slide for 2 counts
b. Tap forward & back for 2 counts
c. Tap once forward & back
d. Tap out to side and back by foot

Score _____ (one or zero)

These skills were decided on because they were the dance moves the teacher had taught throughout the unit. Face validity and content validity of the dance scoring rubric was determined by having a faculty member in physical education, the teacher, and one dance expert provide feedback on the dance scoring system. As a result of this feedback, critical elements and the scoring ranges were modified. Each item was worth one point for a total of four items and students could receive, again, a total score ranged from zero to four. The following dance skills were evaluated to determine dance motor competence:

Skill	Drill Performed for Observation	Total Possible Score
Walking/Arms	15 feet away walk forward for 4 counts moving knees then walk forward for 4 counts use arms and knees	0-1
Turn/Walking/Arms	15 feet away turn walk forward for 4 counts moving knees then walk forward for 4 counts use arms and knees	0-1
Tapping	slide for 2 counts tap forward & back for 2 counts tap once forward & back tap out to side and back by foot	0-1
Slides/Free Style	slide 2 counts move arms & free style for 4 counts slide 2 counts move arms & free style for 4 counts	0-1

Figure 3.1 Dance Skills

Students were videotaped performing the dance skills so the researcher could watch the performances in slow motion and accurately code the student using the dance scoring rubric. Students were videotaped in small groups no larger than five. There was a camera facing the students were spread out so the researcher could see all the students in the frame of the video camera. The group of students were asked to perform the opening segment of the dance by themselves for the video camera. Videotaping students was

completed prior to and following the dance unit and took approximately five minutes per group.

Inter-observer agreement on dance motor competence was completed by having a separate dance expert score 50 percent of the performances that were scored by the investigator. Based on this, inter-observer agreement was reported as 99 percent for pretest measures and 99 percent for posttest measures with 50 percent of all trials evaluated.

Floor Hockey Competence

Student's motor competence was also assessed for the floor hockey unit similar to the assessment of the dance unit. To measure floor hockey competence students were evaluated by a researcher developed rubric (Appendix K). The skills analyzed for the floor hockey rubric were the specific skills that the students learned throughout the unit, and included: 1) wrist shot, 2) passing, 3) dribbling and, 4) trapping and for each of the four skills performance criteria were developed (Appendix K). The students were evaluated by the floor hockey rubric, where students received a one if the behavior was present and performed correctly, a zero if the behavior was not present or if performed incorrectly. An example of one of the four skills students were evaluated on where they could score a one or zero is as follows:

Dribble

a. Dominate hand on middle of stick
b. Non-dominate hand on top of stick
c. Puck stays in front of student
d. Student dribbles three consecutive times

Score _____ (one or zero)

These skills were decided on because these were the most important aspects of knowing the game of hockey. In addition, the teacher had focused on these specific hockey skills throughout the unit. These skills were also checked to ensure that they were appropriate for this age level. The following floor hockey skills were evaluated to determine floor hockey motor competence:

Skill	Drill Performed for Observation	Total Possible Score
Dribble	Dribble 20 Feet Down Around a Cone and Dribble 20 Feet Back	0-1
Pass	Dribble 20 Feet Down Around a Cone and Dribble 20 Feet Back Stop and Pass	0-1
Trap	Dribble 20 Feet Down Around a Cone and Dribble 20 Feet Back, Pass, and Trap the Pass	0-1
Shoot	Dribble 10 Feet Shoot on Net	0-1

Figure 3.2 Floor Hockey Skills

To ensure that the rubric was valid and reliable a faculty member in physical education and the teacher provided feedback on the rubric. Moreover, two floor hockey experts also looked over the rubric, gave specific skill suggestions for floor hockey critical elements. As a result of the feedback the critical elements for the floor hockey skills included modifying the skills and critical elements evaluated. Floor hockey skills of the students were scored by watching a video performance of students performing specific hockey skills in two drills (Appendix K).

Students were videotaped one at a time on specific drills the teacher identified to align with observation of the skills and critical elements. Videotaping students was completed pretest and posttest the floor hockey unit and took approximately 25 minutes per class. Inter-observer agreement on floor hockey motor competence was completed by having a separate floor hockey expert score 50 percent of the performances that were scored by the investigator. Based on this, inter-observer agreement was reported as 99 percent for pretest measures and 100 percent for posttest measures with 50 percent of all trials evaluated.

Dance and Floor Hockey Self-efficacy

Dance Self-Efficacy

Self-efficacy is an individuals understanding of competence across a variety of domains (Bandura, 1986). Self-efficacy can also be defined as a belief an individuals has about their ability to engage in a specific activity (Bandura, 1986, p. 391; Bandura, 2004; Ward, Saunder, & Pate, 2007, p. 26). To determine dance self-efficacy a scale was developed by a panel of experts that included a physical activity specialist, elementary physical education specialist, secondary specialist, situated self-efficacy specialist, and a graduate student (Appendix E). This survey was used for the first time in this study. The overall dance self-efficacy scale included six items to determine students experience dancing and their perceptions of their ability to dance. The scoring ranged from a one to a six. An example of a question on the scale is as follows:

1. I am confident I can hip-hop dance very well.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

Before the implementation of this instrument the students first watched a video on hip-hop dance. The purpose of watching the video was to increase their understanding of hip-hop dance in order to situate conceptions of their ability of their self-efficacy responses on the scale (Li, Lee, & Solmon, 2005). After watching the hip-hop dance video the students completed the dance self-efficacy scale. These questions took approximately five minutes to complete. When students were finished data were coded. The coded data were split into two categories for analysis. Question one asked the students their perception of their experience with hip-hop dance and was treated as the first category for analysis and reported as descriptive data. Students could get a score of a one (no experience) to six (extensive experience) when answering this question. The remaining questions two through six were also scored from one (strongly disagree) to six (strongly agree) and was reported in the statistical analysis. The self-efficacy questions two through six were added and the total range of scores students could get was 5 to 30. A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest dance self-efficacy ($\alpha = 0.874$, $\alpha = 0.867$). Thus, the self-efficacy dance scale was believed to be valid and reliable for the present study.

Floor Hockey Self-Efficacy

To determine floor hockey self-efficacy a scale was developed by a panel of experts that included a physical activity specialist, elementary physical education specialist, secondary specialist, situated self-efficacy specialist, and a graduate student (Appendix D). This survey was used for the first time in this study. The overall floor hockey self-efficacy scale included six items to determine students experience dancing

and their perceptions of their ability to play floor hockey. The scoring ranged from a one to a six. An example of a question on the scale is as follows:

1. I am confident I can play floor hockey very well.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

Before the implementation of this instrument the students first watched a video of a floor hockey game played by similar aged children. The purpose of watching the video was to increase their understanding of what floor hockey was, again, in order to situate conceptions of their ability of their self-efficacy responses on the scale (Li, Lee, & Solmon, 2005). After watching the floor hockey video the students completed the floor hockey self-efficacy scale. These questions took approximately five minutes to complete. When students were finished data were coded. The coded data were split into two categories for analysis. Question one asked the students their perception of their experience with floor hockey and was treated as the first category for analysis and reported as descriptive data. Students could get a score of a one (no experience) to six (extensive experience) when answering this question. The remaining questions two through six were also scored from one (strongly disagree) to six (strongly agree) and was reported in the statistical analysis. The self-efficacy questions two through six were added and the total range of scores students could get was 5 to 30. A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest floor hockey self-efficacy ($\alpha = 0.822$, $\alpha = 0.876$). Thus, the self-efficacy floor hockey scale was believed to be valid and reliable for the present study.

Social Situation Scale

A modified version of the social situation scale by Sallis, Grossman, Pinski, Patterson, and Nader (1987) was used to measure the social support for physical activity. The original scale was considered reliable and valid (Sallis, Grossman, Pinski, Patterson, & Nader, 1987, p. 825). The original scale had 13 questions and looked at social support provided by family and friends. As this was a school-based intervention only the friends part of the scale was examined. The "friends participation" part of the scale (questions 11-16) and (questions 20-23) and the "rewards and punishment" part of the scale (questions 17-19) were selected to make up the overall social situation score for this study. The overall social situation scale for this study consisted of 13 questions (Appendix F and G) and was modified to specifically address the hip-hop and floor hockey units (see below).

Social Situation Dance Scale

The 13-question dance social situation scale was the same as the scale identified above with the following modifications. The items were modified by changing the word "exercise" to the word "dance" for the dance unit (Appendix F).

An example of a question is as follows:

none 1	rarely 2	a few times 3	often 4	very often 5	does not apply

My friends: Friends

11. Gave me encouragement to practice my dance routine 11. _____

For each question students rated a response from one through five (none=1, rarely=2, few times=3, often=4, and very often=5). When a participant indicated that a question did not apply this score was dropped form the statistical analysis. The number of participants that recorded “does not apply” was identified in the results section. The score for all 13 questions was totaled and ranged from 13 to 65 and represented the student social situation. The participant’s scores were recorded in a password protected data file.

In order to pilot the social situation dance scale, a total of 41, 5th through 8th grade participants completed the social situation dance scale. The results indicated that the instrument was reliable by running a Cronbach's Alpha and internal consistence with acceptable results ($\alpha = 0.952$); ($\alpha = 0.937$). Thus, the modified social situation dance scale was believed to be valid and reliable for the present study.

The social situation dance scale was administered prior to and following the unit of dance instruction to identify students social situation (Appendix F). This scale took approximately five minutes to administer during the regular physical education class in the gymnasium. A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest dance social situation ($\alpha = 0.855$, $\alpha = 0.917$). Thus, the social situation dance scale was believed to be valid and reliable for the present study.

Social Situation Sports Scale

The 13-question sports social situation scale was the same as the scale identified above with the following modifications: The term “exercise” was changed to the term “sports” (Appendix G). An example of a question is as follows:

none 1	rarely 2	a few times 3	often 4	very often 5	does not apply

My friends: Friends

16. Discussed sports with me 16. _____

For each question students rated a response from one through five (none=1, rarely=2, few times=3, often=4, and very often=5). When a participant indicated that a question did not apply this score was dropped from the statistical analysis. The number of participants that recorded “does not apply” was identified in the results section. The score for all 13 questions was totaled and ranged from 13 to 65 and represented the student social situation. The participant’s scores were recorded in a password protected data file.

A pilot study was conducted to test the modified scale by giving the scale in another middle school class on a Wednesday and then the following week on a Thursday. There were a total of 25 participants in 5^{th} through 8^{th} grade who completed the social situation sports scale. A Cronbach's Alpha reported acceptable internal consistency (α = 0.749, α = 0.908). Thus, the modified social situation floor hockey scale was believed to be valid and reliable for the present study.

The social situation floor hockey scale was administered prior to and following the unit of floor hockey instruction to identify students social situation (Appendix G). This scale took approximately five minutes to administer during the regular physical education class in the gymnasium. A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest sports social situation (α = 0.898,

α = 0.906). Thus, the social situation sports scale was believed to be valid and reliable for the present study.

Outcome Expectancy Value Scale

Outcome expectancy is defined as "an individual's perception that a given behavior will lead to specific outcomes" (Wilcox, Castro, & King, 2006, p. 66). Outcome expectancy values were measured in this study to determine if the students knew what healthy behaviors were and if they valued these behaviors. For the purpose of this study, Winter's (2001) Outcome Expectation Value instrument was used to measure outcome expectancy values. This scale measures outcome expectancy values by first asking the student if a certain outcome resulted from exercise, then a sub-question followed and asked if the students valued this outcome. That is, the main question determined if they knew what healthy behaviors were, subsequently the sub question was to determine if they valued these healthy behaviors.

The original Outcome Expectation Value Instrument consisted of questions in seven sub-domains: 1) fitness (five items), 2) relaxation (five items), 3) beautiful movement (five items), 4) thrills (five items), 5) competition (five items), 6) social continuation (five items), and. 7) social growth (five items) (Hortz, Winters, Petosa, & Grim, 2007, p. 4; Winters, 2001). The original scale was considered valid and reliable with strong internal consistency (α =0.94) (Hortz, Winters, Petosa, & Grim, 2007, p. 7). For the purpose of the current study, only four of the seven domains were deemed appropriate to the goals of the study. These four domains included: relaxation, fitness, beautiful movement, and social continuation, each with five questions per domain.

Thrills, competition, and social growth were not included because these were not components of the study.

Thus, the resulting scale included 20 questions, each with a sub-question (and thus 20 sub-questions) associated with the original question. Each main question and each sub-question was rated from 1 through 6, with each number meaning the following: 1- never happens, 2- rarely happens, 3- occasionally happens, 4- often happens, 5- usually happens, and 6- always happens (Winters, 2001).

An example of a question is as follows:

Physical Exercise will,

1. relieve my stress	1	2	3	4	5	6
Stress reduction is important to me.						
	Never	**Rarely**	**Occasionally**	**Often**	**Usually**	**Always**

To score this scale the researchers took the top number from the main question and multiplied it by the number from the sub-question resulting in the score for that question. The total for each domain was added up for a total score and the total possible score one question with each domain and sub-domain ranged from 1 to 36. Also, for completing the entire modified scale students could score from 20 to 720 points. The scores were saved in a password protected file for data analysis. For data analysis purposes all the subscales were added together into a total score for the Outcome Expectancy Values scale.

For the purposes of this study minor word modifications were made to the scale in order to align with the dance and floor hockey activities. The modifications are identified below.

Outcome Expectancy Values Dance Scale

The original scale was modified to dance by replacing the words “physical exercise” with dance. For example, the questions stated “I think dance will relieve my stress” to measure outcome expectancy for the dance unit. All other aspects of the scale described above remained the same.

The dance scale was pilot tested by implementing the scale in a middle school class on a Wednesday and then the following Thursday. There were a total of 41, 5th through 8th grade participants who completed the social situation dance scale. The results of a Cronbach's Alpha resulted in acceptable internal consistencies ($\alpha = 0.973$, $\alpha = 0.979$) and demonstrated the instrument was reliable.

The Outcome Expectancy Values Dance Scale was administered prior to and following the Hip Hop dance unit to identify student’s expectations and if they valued these outcome expectancies (Appendix I). This scale took approximately eight minutes to administer during the regular physical education class in the gymnasium. A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest dance outcome expectancy values ($\alpha = 0.965$, $\alpha = 0.976$). Thus, the dance outcome expectancy values dance scale was believed to be valid and reliable for the present study.

Outcome Expectancy Sports Scale

For the floor hockey unit the original scale was also modified by changing the words “physical exercise” to “I think sports will.” All other aspects of the scale described above remained the same.

The sport scale was pilot tested by implementing it in a middle school class on a Wednesday and the following Thursday. There were 25, 5^{th} through 8^{th} grade participants who completed the social situation floor hockey scale. The results of a Cronbach's Alpha resulted in acceptable pre-and posttest internal consistencies ($\alpha = 0.954$, $\alpha = 0.957$) and demonstrated the instrument was reliable.

The Outcome Expectancy Values Floor Hockey Scale was administered prior to and following the unit of floor hockey instruction. This scale took approximately eight minutes to administer during the regular physical education class in the gymnasium (Appendix H). A Cronbach's Alpha was also ran and reported acceptable internal consistency for pretest and posttest sports outcome expectancy values ($\alpha = 0.968$, $\alpha = 0.967$). Thus, the self-efficacy floor hockey scale was believed to be valid and reliable for the present study.

BMI

Body Mass Index (BMI) was taken by measuring the student's height and weight in a secluded area of the gymnasium. For measuring height, the students removed their shoes and stood with their back to the stadiometer, the head was in the cronal plane, and the measure recorded to the nearest one tenth of a cm. The student's weight was recorded to the nearest one tenth of kilogram using a digital scale by having the student step on a scale without their shoes. Once height and weight were measured, BMI was calculated by using the following equation: weight in Kgs /Ht M^2 (USDHHS, 1996).

Procedures

Human Subjects Review Board approval was obtained (Appendix A). The custodial care giver of the participants consented to their child's participation in the study and participant assent was verbally acquired. Of the 78 participants recruited for the study 73 consented to participate in the study although full physical activity data sets only consisted of 53 participants.

This was a within subjects pretest-posttest design. The dance lessons were taught by the physical education teacher in the school gymnasium, the size of a typical elementary school gymnasium (74 ft by 50 ft). Two floor hockey lessons were taught by the physical education teacher and nine were taught by a substitute teacher. Figure 3.3 below identifies the sequence of data collection procedures:

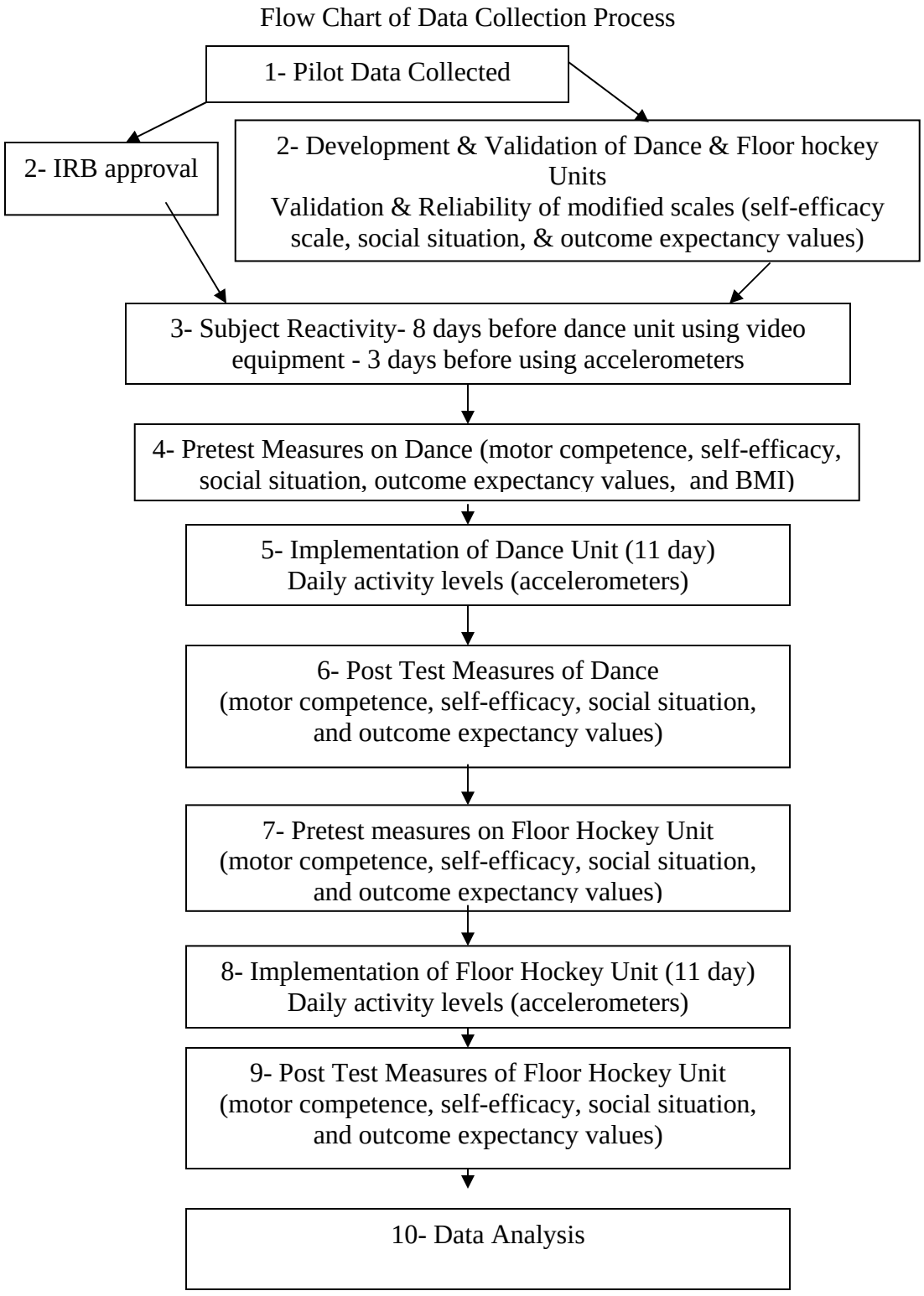

Figure 3.3 Steps in Data Collection

1- Pilot

Prior to the development of the current study, the investigator completed a qualitative project as part of a graduate course that helped to inform the present study by gaining a better understanding of the site in which the study was conducted and also the middle school student's perceptions about physical activity in physical education. Students were enrolled in an 8th grade co-educational physical education class. The investigator visited the physical education class over five observations and made field notes of each visit. She also informally spoke to the students during the physical education class. Following the observations two female African American students were interviewed twice to better understand their activity levels. In the first interview, the two girls were interviewed together and specific questions were developed (see below) before the interview had begun. The first interview lasted approximately 20 minutes. In the second interview both females were again interviewed together but answered a questionnaire that the researcher developed. While completing the questionnaire students were asked accompanying questions based on the answerers that students recorded. The second interview lasted approximately 20 minutes. Some of the questions from both interviews included the following:

1. Do you like physical education?
2. What do you like to do in physical education?
3. What sports do you like?
4. What sports do you dislike?
5. Do you like to dance?
6. What kind of dancing do you do?

7. Where did you learn to dance?

This experience in qualitative research also included a document analysis of school mission changes resulting from No Child Left Behind. The researcher also completed a reflection journal that included information on observations, interviews, document analysis, and the researcher's thoughts about the data collected.

The findings from the pilot study informed the present study in the following ways:

1) Participants suggested that they did not always enjoy activities in their physical education curriculum. More specifically, females identified that often team sports did not meet their needs and were not enjoyable.

2) Females identified that dancing was a central part of their life and they enjoyed dancing. Despite this, they stated they did not view dancing as a form of physical activity.

3) During observations of the physical education classes, female students would start dancing between drills and activities during their badminton or fitness unit.

4) Boys indicated that they liked to "hip hop" and that there were often personal challenges between boys in dancing "harder." When asked what this meant, they said that they would do acrobatic activities because these were "harder" moves and being able to perform them was important.

5) Participants reported that obligations such as baby-sitting younger siblings and/or finance issues prevented them from being involved in after school physical activity programs.

Based on the data from the pilot study and spending time in the middle school physical education setting; the investigator concluded the following: (1) a hip hop dance unit may be a means to promote physical activity for boys and girls; 2) traditional sport units may not meet the needs of girls, and 3) hip hop was a common form of dance that was demonstrated by and enjoyed by both girls and boys.

2- Development and Validation of the Dance Unit

To meet the goal of promoting physical activity through dance, it was necessary to select dance activities that the students would enjoy and be motivated to participate. Thus, the type of dance unit was first decided based upon input from students, who indicted from the pilot study they preferred hip-hop dance. Secondly, the physical education teacher was asked what type of dance lessons to develop for the students and she agreed that hip-hop would be the most appropriate as both boys and girls were motivated to dance hip-hop. In addition, a university dance instructor said that for this age group hip-hop dance would be most appropriate.

The researcher examined the popular hip-hop media and identified a number of hip-hop dances that were popular with African American adolescent youth and also performed by hip-hop pop star icons. The dances selected were “walk it out” “Soulja boy- crank that Superman” “Soulja boy- crank that Spiderman” “Soulja boy- crank that Batman” “Cupid Shuffle” and “Cha-cha slide.” Based on identifying a final dance performance, the dance was task analyzed and lesson plans were developed. The dance lesson plans were typed by the researcher and included: sound pedagogical practices; and peer, teacher, and media modeling inline with SCT; maximizing opportunities for MVPA, and; maximizing opportunities to increase motor competence, self-efficacy,

social situation, and outcome expectancy values. Lesson plans were developed by the researcher, and were modified daily by teacher input and results from student behaviors during the lesson.

Two dance experts read the initial lessons for content validity and gave feedback. The first expert was the physical education teacher, who implemented the lessons and was considered a dance expert in her district. She also was part of a dance performance group and regularly performed dance outside of school. Based on the lesson plans the teacher suggested to give students less time working in groups in order to promote MVPA, thus lesson plans were changed appropriately to reflect this suggestion. Second, she recommended for the media-modeling lesson, that there were stations in which student groups could rotate every ten minutes to get ideas for their choreography. This suggestion was also changed to reflect media modeling in the lesson plans.

The second expert was a university dance instructor, who suggested that warm ups may need to be longer and more vigorous to get higher amounts of MVPA. The lessons were then changed appropriately. The second suggestion was to think about behavior management issues for the students who work in groups. No changes were made via this suggestion, since the teacher implemented the lessons and the researcher and the teacher had already discussed these concerns.

2- Development and Validation of the Floor Hockey Unit

Floor hockey was selected as the sport unit, as floor hockey was due to be taught in the annual plan for the physical education curriculum and also floor hockey was an inside activity and the conditions were cold outside. The content of the floor hockey unit was decided based upon input from the teacher and resources in the pedagogical literature.

The floor hockey lesson plans were developed in conjunction with the teacher and included: sound pedagogical practices; opportunities for MVPA, and; increasing motor competence, self-efficacy, social situation, and outcome expectancy values.

The researcher was an expert in floor hockey who had played hockey, coached hockey, and taught hockey at the university. Since the substitute teacher followed the lesson plans that the regular physical education teacher developed. Daily the researcher and the substitute would discuss the lesson plans for the day. Based on the lesson plans the teacher developed, to ensure it followed the guidelines of the research study (i,e. ensuring the last ten minutes were devoted to game play).

2 – Development and Validation of Instruments

The development and validation of the different instruments used for this study were described under the instrumentation section. The only instrument that had not been previously tested prior to the start of the intervention was the dance and floor hockey self-efficacy scales.

3- Minimizing Subject Reactivity

Subject reactivity refers to a participant's response to a new situation such as wearing an accelerometer or being in the presence of a video camera (Thomas, & Nelson, 2001). That is, if data collection occurred on the first day the participant wore an accelerometer, it may be the participant was more active that day due to the novelty of wearing the accelerometer. Thus, three days before the study started all participants began wearing an accelerometer. This was in line with the recommendation that subjects wear the accelerometer for three days prior to the collection of data (Sirard, & Pate, 2001).

Additionally, cameras were set up in the gymnasium eight days prior to the onset of videotaping for data collection and the primary researcher was present in the gymnasium for lesson plans. These procedures minimized subject reactivity to ensure the dependent variable were not influenced as a result of the camera and researcher being present during the lessons or the wearing of accelerometers.

4 – Pretest of Dependant Variables Prior to the Dance Unit

At the start of the unit participants watch a video that demonstrated what activity students were to complete, then they completed the self-efficacy, social situation, and outcome expectancy values scale during the physical education class as a large group as described under instrumentation. Also, students completed the pre-assessment on dance competence.

5 – Implementation of the Dance Unit

An 11 day dance unit was implemented during the three physical education classes (class 1= 45 minutes, class 2= 46 minutes long, and class 3=42 minutes long) (Appendix L). Each day student's entered the gymnasium, put on a specific numbered accelerometer, and the researcher took student attendance. Once the accelerometers were attached, students would complete the warm-up on the instruction board, which lasted exactly ten minutes and time was recorded by the researcher. After the completion of the warm up the teacher would start the lesson.

The lesson content varied across the unit and included activities such as free dance, working with peers, media modeling, and teacher modeling. Toward the end of the lesson in the last ten minutes of class the students performed dance activities from practicing their dance to teacher lead movements across the floor. In addition, the

students brought in music for the lessons and the music was sanitized prior to use in the lessons. The block plan for the 11 day unit is located in Appendix L. The block plan for the activities that made up the last ten minutes of class are below in figure 3.4.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
10 min Practice- Practice walk it out	10 min Practice- Movement across the floor	10 min Practice- Practice walk it out	10 min Practice- Continuous cha-cha slide	10 min Practice- Practice dance free style, teacher played music
Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
10 min Practice- Practice Spiderman dance	10 min Practice- Continue to learn Spiderman and practice moves	10 min Practice- Practice dance with all songs 3X's	10 min Practice- Walk across floor different movements teach calls out- practice dance 1X	10 min Practice- Practice final dance 3X's
Lesson 11				
10 min Practice- Final performance on stage				

Figure 3.4 Dance activities students participated in last 10-minutes

Each lesson incorporated specific strategies to promote physical activity, motor competence, dance self-efficacy, enhance peer support, and promote outcome expectancy values. These strategies included: 1) Physical activity - a longer physical activity warm-up and time for dancing; 2) Motor competence - many opportunities to respond and engage in dance; 3) Dance self-efficacy - praise, corrective, and positive specific

feedback, peer coaching, and preparing for one group performance; 4) Social situation - opportunities to work with peers; 5) Outcome expectancy values - opportunities to increase skills and outcomes based on performances.

Modeling was present during the unit, including peer modeling, teacher modeling, and media modeling (typically hip-hop videos) to aid in the learning of dance skills and promote dance self-efficacy and outcome expectancies. Following the lesson, the teacher would encourage the students to practice dancing by themselves and/or with peers outside of class to increase their dance competence and self-efficacy. The teacher also encouraged students to be creative and develop their own choreography by celebrating their ideas at the start of the unit. Additionally, the teacher gave positive specific feedback throughout the lesson.

At the end of the lesson the teacher would blow the whistle and the students would take off their accelerometers and put them in the accelerometer case with their appropriate number. Once the lessons for the week were completed the accelerometer data was downloaded onto a computer, then the time of instruction was recorded. The student's attendance was recorded for the day and for each lesson. The overall attendance rate for the dance physical activity intervention was 85.7%, for class one it was 80.9%, class two 85.5%, and class three was 83.6%.

6 – Posttest Measures of Dance Unit

Posttest measures were completed at the end of the unit in the same manner as the pretest measures (see above).

7 – Pretest of Dependant Variables Prior to the Floor Hockey Unit

At the start of the floor hockey unit participants completed the floor hockey self-efficacy, social situation, and outcome expectancy values scale during the physical education class as a large group as described under instrumentation. In order to enhance the student's understanding of floor hockey and situate their self-efficacy the students watched a short video clip on individuals playing floor hockey. Floor hockey competence was assessed during the physical education class by videotaping each student completing the floor hockey skills as described under instrumentation.

8 – Implementation of the Floor Hockey Unit

An 11-day floor hockey unit was implemented during the three physical education classes (class 1= 45 minutes, class 2= 46 minutes long, and class 3=42 minutes long). Each day student's entered the gymnasium, put on a specific numbered accelerometer, and the researcher took student attendance. Once the accelerometers were attached, students would complete the warm-up on the instruction board, which lasted exactly ten minutes and time was recorded by the researcher. After the completion of the warm up the teacher would start the lesson activities for the day. The lesson activities are described in the block plan and included practicing dribbling, passing, shooting, and positioning (Appendix M). The block plan for the activities that made up the last ten minutes of class are below in figure 3.5.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
10 min Practice- Dribble around gymnasium	10 min Practice- Passing in group 4V0 then practice with defender 4V1	10 min Practice- 4V4 game	10 min Practice- Game 3V3 and 4V4	10 min Practice- Game
Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
10 min Practice- Game	10 min Practice- Game	10 min Practice- Game	10 min Practice- Game	10 min Practice- Game
Lesson 11				
10 min Practice- Game				

Figure 3.5 Floor hockey activities students participated in last 10-minutes

Toward the end of the lesson a ten minute period of class was devoted to game play. During this ten minutes the class was split into two games and students engaged in game play.

Since the regular physical education teacher was injured and had to get knee surgery the teacher only taught two lessons in floor hockey. Then the substitute teacher described above taught the reminder of the nine floor hockey lessons. The substitute would get the daily lessons from the regular physical education teacher via email and would implement the goals of the lesson for the day. The researcher was also available at the site to clarify any questions concerning lesson context.

Each lesson incorporated specific strategies to promote physical activity, motor competence, self-efficacy, social situation, and outcome expectancy values. These strategies included: 1) Physical activity - a longer physical activity warm-up and more time to engage in floor hockey; 2) Motor competence - many opportunities to respond and engage in floor hockey; 3) Self-efficacy - praise, corrective, and positive specific feedback 4) Social situation - opportunities to work with peers; 5) Outcome expectancies - opportunities to increase skills and outcomes based on performances in games.

Modeling was present during the unit, including peer modeling and teacher modeling, to aid in the learning of floor hockey skills and promote self-efficacy and outcome expectancy values. The teacher gave positive specific feedback throughout the lesson. Once the lessons for the week were completed the accelerometer data was downloaded onto a computer, then the time of instruction was recorded. Finally, the student's attendance was recorded for the day and each lesson. At the end of the lesson the teacher would blow the whistle and the students would take off their accelerometers and put them in the accelerometer case with their appropriate number. The overall attendance rate for the floor hockey physical activity intervention was 88.7%, for class one it was 91.2%, class two 87.6%, and class three was 89.4%.

9 – Posttest Measures of a Floor Hockey Unit

Posttest measures were completed at the end of the unit in the same manner as the pretest measures (see above).

10 – Data Analysis of Research Questions

Chapter 1 lists the research questions. The investigator chose to analyze these data at the level of the student rater than the class. The rationale for this decision was based on the fact that there was variance in the data as indicated by relatively high standard deviations. Thus, for the purposes of the data analysis section, the alternate hypotheses and the data analysis to answer the question are as follows:

Primary Research Hypotheses

Hypothesis 1 – A Hip Hop dance unit will have greater physical activity levels than a floor hockey unit for 6th grade students in physical education.

H_{1a}: Were there differences in average physical activity counts per lesson between a dance and floor hockey unit?

H_{1b}: Were there differences in the average percent of MVPA between a dance and floor hockey unit?

H_{1c}: Were there differences in average activity counts for a designated ten-minute activity session between a dance and floor hockey unit?

H_{1d}: Were there differences in the average MVPA for a designated ten-minute activity session between a dance and floor hockey unit?

For each hypothesis a Dependent Sample *t*-test was conducted to examine differences in physical activity between a dance and floor hockey unit using H_{1a} (average activity counts), H_{1b} (average percent of MVPA), H_{1c} (average activity counts for a designated ten-minutes), and H_{1d} (average percent of MVPA for a designated ten-minutes).

Secondary Research Hypotheses

Hypothesis 2 - Motor competence will significantly change from pretest to posttest for a Hip Hop dance unit and a floor hockey unit in 6th grade students in physical education.

H_{2a}: Were there pretest to posttest changes in motor competence within the dance unit?

H_{2b}: Were there pretest to posttest changes in motor competence within the floor hockey unit?

Two paired sample *t*-test (dance and floor hockey) were conducted using pretest and posttest mean motor competence scores to examine possible pretest to posttest changes in motor competence and to answer H_{2a} and H_{2b}.

Hypothesis 3 – Self-efficacy will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{3a}: Were there pretest to posttest changes in self-efficacy within the dance unit?

H_{3b}: Were there pretest to posttest changes in self-efficacy within the floor hockey unit?

Two paired sample *t*-test (dance and floor hockey) were conducted using pretest and posttest mean self-efficacy scores to examine possible pretest to posttest changes in self-efficacy and to answer H_{3a} and H_{3b}.

Hypothesis 4 – Social situation will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{4a}: Were there pretest to posttest changes in dance social situations within the dance unit?

H_{4b}: Were there pretest to posttest changes in sports social situations within the floor hockey unit?

Two paired sample *t*-test (dance and floor hockey) were conducted using pretest and posttest mean social situation scores to examine possible pretest to posttest changes in motor competence and to answer H_{4a} and H_{4b}.

Hypothesis 5 – Outcome Expectancy Values will significantly change from pretest to posttest for 6th grade students in a Hip Hop dance unit and a floor hockey unit.

H_{5a}: Were there pretest to posttest changes in dance outcome expectancy values within the dance unit?

H_{5b}: Were there pretest to posttest changes in sports outcome expectancy values within the floor hockey unit?

Two paired sample *t*-test (dance and floor hockey) were conducted using pretest and posttest mean outcome expectancy scores to examine possible pretest to posttest changes in motor competence and to answer H_{5a} and H_{5b}.

CHAPTER 4

RESULTS

Introduction

This chapter will provide the results to the research questions asked in chapter one. The first section of this chapter will examine possible differences in physical activity between the dance and floor hockey units. This study measured physical activity within the dance and floor hockey units in four different ways as each approach provided some unique view of the physical activity within the unit. The four approaches were the average physical activity counts per lesson, average percent of moderate to vigorous physical activity (MVPA), average activity counts for a designated ten-minute activity session, and average number of MVPA counts for a designated ten-minute activity session. The second part of the chapter will examine possible pretest to posttest differences in a number of secondary dependent variable associated with physical activity (motor competence, self-efficacy, social situation, and outcome expectancy values). The final part of the results section will examine the extent to which secondary dependent variables predicted physical activity within the dance and floor hockey unit.

Missing Data

It was decided to only use complete data sets by instrument, see table 4.1. In other words students had to have complete pretest and posttest dance and pretest and posttest floor hockey scores for an instrument for the data to be included. Additionally, motor competence had a much lower N because prior to the implementation, the principal moved the participants to different classes due to school behavioral issues.

Total Physical Activity	N
Dance & FH	53
Percent of MVPA	
Dance & FH	53
Total Ten Min Activity	
Dance& FH	53
Total MVPA Ten Min Activity	
Dance & FH	53
Motor Competence	
Pre-Post Dance	19
Pre-Post Floor Hockey	19
Experience	
Pre-Post Dance	38
Pre-Post Floor Hockey	38
Self-Efficacy	
Pre-Post Dance	38
Pre-Post Floor Hockey	38
Social Situation	
Pre-Post Dance	46
Pre-Post Floor Hockey	46
Outcome Expectancy Values	
Pre-Post Dance	47
Pre-Post Floor Hockey	47

Table 4.1 The total number of participants with full data sets in both dance and floor hockey for physical activity and secondary variables.

Physical Activity

It is important to note that the analysis of activity revealed that there were no missing physical activity data. That is, there were no missing epochs in the data downloaded and analysis.

Differences in Average Physical Activity Counts between the Dance and Floor Hockey Unit

A Dependent Samples *t*-test was ran to determine possible differences in average physical activity counts between the dance and floor hockey unit. Average physical counts were calculated by adding up the total activity counts from each lesson for each student, then dividing the activity counts by the lesson length, then dividing this number by the number of lessons the students attended. Table 4.2 shows the mean scores and standard deviations for average physical activity counts for the dance and floor hockey unit. The dance average physical activity counts for skewness was 1.058 and kurtosis was 2.528. The floor hockey average physical activity counts for skewness was .925 and kurtosis was 1.773.

The Dependent Samples *t*-test revealed that the dance unit had significantly greater average physical activity counts per lesson than the floor hockey unit ($t[52]= 5.767$, $p<.000$). Thus, Research Question 1A was supported indicating the dance unit resulted in greater average physical activity counts than the floor hockey unit.

Average Physical Activity Counts for Dance	N	Means	*SD*	Average Physical Activity Counts for Floor Hockey	N	Means	*SD*
Class 6	19	1869.98	589.322	Class 6	19	1502.91	334.286
Class 7	15	2132.17	1064.613	Class 7	15	1472.91	530.468
Class 8	19	1732.74	597.581	Class 8	19	1480.03	545.009
Dance Overall	53	1894.98	758.322	FH Overall	58	1486.22	466.292

Table 4.2 Mean scores and standard deviations for average physical activity counts for the dance and floor hockey unit

Differences in Average Percent of MVPA between the Dance and Floor Hockey Unit

A Dependent Samples *t*-test was ran to determine possible differences in the average percent of MVPA between the dance and floor hockey unit. Average percent of MVPA was calculated by first determining the number of times students were over the MVPA cut point of 3.0 METs and higher and adding this number together. Then this number was divided by the lesson length creating a percent score. The percent score was then divided by the number of lessons the student attended. Then each student had a percentage score for dance and floor hockey and comparisons were made.

Table 4.3 shows the mean scores and standard deviations for average percent of MVPA for the dance and floor hockey unit. The dance percent of MVPA skewness was .574 and kurtosis was 1.362. The floor hockey percent of MVPA skewness was 1.623 and kurtosis was 3.478.

The Dependent Samples *t*-test revealed that the dance unit had significantly greater average percent of MVPA per lesson than the floor hockey unit ($t[52]= 5.492$, $p<.000$). Thus, Research Question 1B was supported indicating the dance unit resulted in greater average percent of MVPA than the floor hockey unit.

Average Percent of MVPA for Dance	N	Means	*SD*	Average Percent of MVPA for Floor Hockey	N	Means	*SD*
Class 6	19	0.46	0.155	Class 6	19	0.34	0.175
Class 7	15	0.46	0.175	Class 7	15	0.33	0.215
Class 8	19	0.45	0.181	Class 8	19	0.35	0.173
Dance Overall	53	0.46	0.167	FH Overall	53	0.34	0.183

Table 4.3 Average percent of MVPA for the dance and floor hockey unit

Differences in Average Activity Counts for a Designated Ten-Minute Activity Session between the Dance and Floor Hockey Unit

A Dependent Samples *t*-test was ran to determine possible differences in average activity counts for a designated ten-minute activity session between the dance and floor hockey unit. The average activity counts for a ten minute physical activity session were calculated by adding up the total activity counts for each ten minute session for each student, then dividing the activity counts by ten minutes, and then dividing by the number of lessons the students attended.

Table 4.4 shows the mean scores and standard deviations for average activity counts for a designated ten-minute activity session for the dance and floor hockey unit. The dance average physical activity counts for the ten minute session skewness was

1.130 and kurtosis was 3.214. The floor hockey average physical activity counts for the ten minute session skewness was .707 and kurtosis was .594.

The Dependent Samples *t*-test revealed that the dance unit had significantly greater average activity counts for a designated ten-minute activity session per lesson than the floor hockey unit ($t[52]= 7.745$, $p<.000$). Thus, Research Question 1C was supported indicating the dance unit resulted in greater average activity counts for a designated ten-minute activity session than the floor hockey unit.

Average Activity Counts -10 Min Dance	N	Means	*SD*	Average Activity Counts - 10 Min Floor Hockey	N	Means	*SD*
Class 6	19	2529.676	1106.886	Class 6	19	1234.62	400.614
Class 7	15	2948.583	1836.002	Class 7	15	1302.523	457.11
Class 8	19	2129.709	894.328	Class 8	19	1334.979	506.264
Dance Overall	53	2504.85	1310.329	FH Overall	53	1289.816	449.929

Table 4.4 Average activity counts for a designated ten-minute activity session for the dance and floor hockey unit

Differences in Average MVPA Counts for a Designated Ten-Minute Activity Session between the Dance and Floor Hockey Unit

A Dependent Samples *t*-test was ran to determine possible differences in average MVPA counts for a designated ten-minute activity session between the dance and floor hockey unit. Average of MVPA counts for the ten-minute activity session were calculated by adding the number of times a students exceeded the cut point of 3.0 METs, then this number was divided by ten minutes, and then this was again dividing by the

number of lessons the student attended. Then each student had a score for dance and floor hockey and comparisons were made.

Table 4.5 shows the mean scores and standard deviations for the MVPA counts for a designated ten-minute activity session for the dance and floor hockey unit. The dance average MVPA for the ten minute activity session skewness was -.405 and kurtosis was -.107. The floor hockey MVPA for the ten minute activity session skewness was 1.202 and kurtosis was 1.181.

The Dependent Samples *t*-test revealed that the dance unit had significantly greater average in the number of MVPA counts for a designated ten-minute activity session per lesson than the floor hockey unit ($t[52]= 8.568$, $p<.000$). Thus, Research Question 1D was supported indicating the dance unit resulted in greater average of MVPA for a designated ten-minute activity session than the floor hockey unit.

Average -10 Min MVPA Activity Counts Dance	N	Means	*SD*	Average- 10 Min MVPA Activity Counts Floor Hockey	N	Means	*SD*
Class 6	19	6.32	2.065	Class 6	19	2.94	2.331
Class 7	15	6.2	2.606	Class 7	15	3.4	2.509
Class 8	19	5.84	1.987	Class 8	19	3.27	2.258
Overall	53	6.11	2.171	Overall	53	3.19	2.319

Table 4.5 Average number of MVPA counts for a designated ten-minute activity session for the dance and floor hockey unit

Moreover, other physical activity data revealed when students were engaged in the dance unit they were in MVPA for 46% of time and for the floor hockey unit 34%. The other physical activity data for the ten minute activity session also revealed that when students were engaged in the dance unit they were in MVPA for 61% of time and for the floor hockey unit 31.9%. Both falling short of the recommended guidelines of MVPA for 50% or more of the lesson.

Secondary Dependent Variables

This study also examined a number of secondary dependent variables that were believed to be associated with the primary dependent variable of physical activity. These variables were motor competence, self-efficacy, social situation, and outcome expectancy values. It was not of interest to compare these secondary dependent variables between the dance and floor hockey units. Rather, the question of interest was to examine whether these secondary dependent variables changed from pretest to posttest in an attempt to interpret the physical activity data. The following section examines whether the secondary dependent variables changed from pretest to posttest.

Table 4.6 shows the correlations among the secondary variables. These variables were correlated against each other in order to examine the extent to which secondary dependent variables were significantly correlated with each other. Table 4.6 shows that 42 of the 128 correlations were significant correlated with moderate to strong correlations. As a result of these findings it was considered most prudent to conduct a bonferroni adjustment of the alpha level in order to minimize the possibility of a Type I error. The alpha level was adjusted prior to running the paired samples *t*-test and was set at p=.006 (α/8 test).

Correlations Among Secondary Variables

	Pre Dance Motor Comp (MC)	Pre Dance Self-efficacy (ES)	Pre Dance Social Situation (SS)	Pre Dance Outcome Expectancy Values (OEV)	Post Dance MC	Post Dance SE	Post Dance SS	Post Dance OEV	Pre FH MC	Pre FH SE	Pre FH SS	Pre FH OEV	Post FH MC	Post FH SE	Post FH SS	Post FH OEV
Pre Dance Motor Comp (MC)	1.0	**.35***	.17	.32	.27	**.34***	.17	.16	-.13	.29	.15	.21	.04	-.12	.23	.28
Pre Dance Self-efficacy (SE)		1.0	**.63****	**.45****	**.51****	**.76****	**.4***	**.34***	.21	.13	.20	.24	.13	.28	.28	.27
Pre Dance Social Situation (SS)			1.0	**.55****	.23	**.62****	**.41****	**.44****	.02	**.34***	.20	**.37***	.27	-.12	**.37***	**.33***
Pre Dance Outcome Expectancy Values (OEV)				1.0	.13	**.58****	.17	**.74****	-.2	**.44****	.29	**.59****	**.39***	.28	.14	**.528****
Post Dance MC					1.0	.20	.13	.00	-.16	.08	-.04	-.03	**.30***	.20	.01	.23
Post Dance SE						1.0	**.42****	**.56****	-.06	.20	.01	**.42****	.20	.10	**.29***	**.33***
Post Dance SS							1.0	**.31***	.05	.11	.26	.18	.03	.07	**.48****	**.28***
Post Dance OEV								1.0	-.08	**.48****	**.48****	**.80****	.15	.20	.20	**.77****

Table 4.6 Correlations among secondary variables (Continued)

Table 4.6 Correlations among secondary variables (Continued)

	Pre Dance Motor Comp (MC)	Pre Dance Self-efficacy (ES)	Pre Dance Social Situation (SS)	Pre Dance Outcome Expectancy Values (OEV)	Post Dance MC	Post Dance SE	Post Dance SS	Post Dance OEV	Pre FH MC	Pre FH SE	Pre FH SS	Pre FH OEV	Post FH MC	Post FH SE	Post FH SS	Post FH OEV
Pre FH MC									1.0	-.12	.14	.00	.02	.27	.09	.05
Pre FH SE										1.0	.00	**.65****	.13	**.37****	.2	**.61****
Pre FH SS											1.0	.23	.09	.06	**.57****	.102
Pre FH OEV												1.0	.27	**.52****	.26	**.74****
Post FH MC													1.0	.03	-.01	.18
Post FH SE														1.0	.5	**.51****
Post FH SS															1.0	.19
Post FH OEV																1.0

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

Pretest to Posttest Differences in Motor Competence Across the Dance and Floor Hockey Units

Motor competence is the student's skill level in ability to dance and play floor hockey. The minimum score for motor competence was zero and the maximum scores was four. In order to examine whether motor competence changed from pretest to posttest during the unit of instruction, a paired samples (pretest, posttest) *t*-test was conducted for each of the dance and floor hockey units. Table 4.7 shows the mean pretest and posttest scores and standard deviations for motor competence for the dance and floor hockey units. The dance pretest posttest motor competence skewness was .998, and -.683 and kurtosis was -.088 and -1.131. The floor hockey pretest and posttest motor competence skewness was -.007 and -.593 and kurtosis was -.373 and -1.856.

The two paired sample *t*-tests revealed that there was a significant change in motor competence from pretest to posttest for the dance ($t[18]=-9.123$, $p<.000$) and floor hockey ($t[18]=-8.547$, $p<.000$) units. In both units of instruction, the students significantly improved their dance and floor hockey motor competence across the unit, thus, research question 2A and 2B were supported.

Pretest Dance Motor Competence	N	Means	*SD*	Pretest Floor Hockey Motor Competence	N	Means	*SD*
Class 6	7	1.14	.378	Class 6	7	2.14	.378
Class 7	2	2.5	0.707	Class 7	2	2	1.414
Class 8	10	1.6	0.699	Class 8	10	2.5	.972
Dance Overall	19	1.53	.697	FH Overall	19	2.32	.82
Posttest Dance Motor Competence	N	Means	*SD*	Posttest Floor Hockey Motor Competence	N	Means	*SD*
Class 6	7	2.86	0.9	Class 6	7	3.57	0.535
Class 7	2	4	.00	Class 7	2	3.5	0.707
Class 8	10	3.5	0.707	Class 8	10	3.7	0.483
Dance Overall	19	3.32	0.82	FH Overall	19	3.63	0.496

Table 4.7 Pretest Posttest differences in motor competence dance and floor hockey

Pretest to Posttest Differences in Self-Efficacy Across the Dance and Floor Hockey Units

Prior to evaluating self-efficacy, students were asked their experience in dance and floor hockey. Experience was measured pretest and posttest to determine the amount of knowledge proceeding and preceding the implementation of the dance and floor hockey unit. The minimum score for experience was one and the maximum scores was six. In order to examine whether students experience changed from pretest to posttest during the unit of instruction, a paired samples (pretest, posttest) *t*-test was conducted for each of the dance and floor hockey units. The dance experience pretest and posttest skewness was -.654 and -1.403 and kurtosis was -1.085 and 2.559. The floor hockey experience pretest and posttest skewness was -.008 and -.071 and kurtosis was -.636 and -1.092.

The paired sample *t*-test revealed that there was a significant change in experience from pretest to posttest for the dance (*t*[37]=-2.956, *p*<.005) and floor hockey (*t*[37]= -5.244 , *p*<.000) units. As might be expected, the students significantly improved their dance and floor hockey experience across the unit.

Pretest Dance Experience	N	Means	*SD*	Pretest Floor Hockey Experience	N	Means	*SD*
Class 6	16	3.75	2.049	Class 6	16	3.12	1.544
Class 7	5	4.6	1.342	Class 7	5	4.4	1.517
Class 8	17	4.71	1.795	Class 8	17	3.29	1.263
Dance Overall	38	4.29	1.873	FH Overall	38	3.37	1.441
Posttest Dance Experience	N	Means	*SD*	Posttest Floor Hockey Experience	N	Means	*SD*
Class 6	16	4.69	1.448	Class 6	16	4.5	1.033
Class 7	5	5.6	0.548	Class 7	5	4.6	.894
Class 8	17	5.18	0.883	Class 8	17	4.59	1.121
Dance Overall	38	5.03	1.15	FH Overall	38	4.55	1.032

Table 4.8 Pretest Posttest differences in overall experience in dance and floor hockey

Self-efficacy was also examined pretest and posttest dance and floor hockey units. Self-efficacy is the student's belief of competency to adequately dance or play floor hockey. The minimum score for self-efficacy was 6 and the maximum scores was 36. In order to examine whether self-efficacy changed from pretest to posttest during the unit of instruction, a paired samples (pretest, posttest) *t*-test was conducted for each of the dance and floor hockey units. Table 4.9 shows the mean pretest and posttest scores and standard deviations for self-efficacy for the dance and floor hockey units. The dance pretest and posttest self-efficacy skewness was -.761 and -1.229 and kurtosis was -.052 and 2.242.

The floor hockey pretest and posttest self-efficacy skewness was -.179 and -.264 and kurtosis was -.386 and -.578.

The paired sample *t*-test revealed that there was a significant change in self-efficacy from pretest to posttest for the dance (t[37]=-3.040, p<.004) and floor hockey (t[37]= -3.168 , p<.003) units. In both units of instruction, the students significantly improved their dance and floor hockey self-efficacy across the unit, thus, research question 3A and 3B were supported.

Pretest Dance Self-Efficacy	N	Means	*SD*	Pretest Floor Hockey Self-Efficacy	N	Means	*SD*
Class 6	16	20.12	7.365	Class 6	16	22.19	4.75
Class 7	5	22.4	6.877	Class 7	5	22	7.106
Class 8	17	23.65	5.255	Class 8	17	20.76	4.982
Dance Overall	38	22	6.468	FH Overall	38	21.53	5.082
Posttest Dance Self-Efficacy	N	Means	*SD*	Posttest Floor Hockey Self-Efficacy	N	Means	*SD*
Class 6	16	23.56	7.155	Class 6	16	23.31	3.807
Class 7	5	23.8	3.633	Class 7	5	23.4	5.727
Class 8	17	24.88	4.498	Class 8	17	23.82	4.545
Dance Overall	38	24.18	5.599	FH Overall	38	23.55	4.291

Table 4.9 Pretest Posttest differences in self-efficacy dance and floor hockey

Pretest to Posttest Differences in Social Situation Across the Dance and Floor Hockey Units

Social situation is how students feel they are supported to engage in dance and floor hockey with their peers. The minimum score for social situation was 13 and the maximum scores was 65. In order to examine whether social situation changed from

pretest to posttest during the unit of instruction, a paired samples (pretest, posttest) *t*-test was conducted for each of the dance and floor hockey units.

The number of participant responses that indicated “does not apply” for the pretest of dance was 32, and for the posttest was 43. The number of participant responses that indicated “does not apply” for the pretest of floor hockey was 51, and for the posttest was 29.

Table 4.10 shows the mean pretest and posttest scores and standard deviations for social situation for the dance and floor hockey units. The means were derived from those students who reported a one through five response and did not include those who indicated “does not apply.” The dance pretest posttest social situation skewness was -.103 and -.067 and kurtosis was -.691 and -.544.

The floor hockey pretest posttest social situation skewness was -.041 and .04 and kurtosis was -.543 and -1.025. The paired sample *t*-test revealed that there were no significant changes in social situation from pretest to posttest for the dance ($t[45]=-1.938$, $p>.059$) and floor hockey ($t[45]=-.873$ $p>.387$) units. In both units of instruction, the students did not significantly improve their dance and floor hockey social situation across the unit, thus, research question 5A and 5B were not supported.

Pretest Dance Social Support	N	Means	*SD*	Pretest Floor Hockey Social Support	N	Means	*SD*
Class 6	17	35.47	15.211	Class 6	17	33.47	14.812
Class 7	11	29.09	13.656	Class 7	11	39.73	11.367
Class 8	18	36.83	10.365	Class 8	18	38.11	13.651
Dance Overall	46	34.48	13.19	FH Overall	46	36.78	13.568
Posttest Dance Social Support	N	Means	*SD*	Posttest Floor Hockey Social Support	N	Means	*SD*
Class 6	17	36.53	134.616	Class 6	17	35.59	15.728
Class 7	11	38.82	13.174	Class 7	11	42.18	9.631
Class 8	18	39.17	13.223	Class 8	18	39.22	17.169
Dance Overall	46	38.11	13.494	FH Overall	46	38.59	15.055

Table 4.10 Pretest Posttest differences in social situation dance and floor hockey

Pretest to Posttest Differences in Outcome Expectancy Values Across the Dance and Floor Hockey Units

Outcome expectancy values are what the student believes the outcome will be for them engaging in an activity, and if they valued the outcome of the result of participation in dance or floor hockey. The minimum score for outcome expectancy values was 20 and the maximum scores was 720. In order to examine whether outcome expectancy values changed from pretest to posttest during the unit of instruction, a paired samples (pretest, posttest) *t*-test was conducted for each of the dance and floor hockey units. Table 4.11 shows the mean pretest and posttest scores and standard deviations for outcome expectancy values for the dance and floor hockey units. The dance pretest posttest outcome expectancy values skewness was -.277 and -.092 and kurtosis was -1.008 and -1.004. The floor hockey pretest posttest outcome expectancy values skewness was .115 and .009 and kurtosis was -1.135 and -.761.

The paired sample *t*-test revealed that there were no significant changes in outcome expectancy values from pretest to posttest for the dance ($t[46]=-.029$, $p>.977$) and floor hockey ($t[46]=.679$, $p>.501$) units. In both units of instruction, the students did not significantly improve their dance and floor hockey outcome expectancy values across the unit, thus, research question 4A and 4B were not supported.

Pretest Dance Outcome Expectancy Values	N	Means	*SD*	Pretest Floor Hockey Outcome Expectancy Values	N	Means	*SD*
Class 6	17	427	204.356	Class 6	17	380.53	192.435
Class 7	12	329.75	204.28	Class 7	12	399.92	233.16
Class 8	18	438.17	137.593	Class 8	18	406.28	161.484
Dance Overall	47	406.45	183.264	FH Overall	47	395.34	188.815
Posttest Dance Outcome Expectancy Values	N	Means	*SD*	Posttest Floor Hockey Outcome Expectancy Values	N	Means	*SD*
Class 6	17	402.06	205.005	Class 6	17	411.94	178.027
Class 7	12	405	242.455	Class 7	12	327.92	178.765
Class 8	18	413.17	191.757	Class 8	18	390.44	175.233
Dance Overall	47	407.06	205.644	FH Overall	47	382.26	176.454

Table 4.11 Pretest Posttest differences in outcome expectancy values dance and floor hockey

Body Mass Index

Body mass index is a measure of a child's percentage of body fat by taking the height and weight and formulating a percentage and then comparing this number with students who are their same gender and age (Yaussi, 2005). Table 4.12 includes the BMI data for the students involved in the study.

BMI	N	Means	*SD*
Class 6	19	22.44	3.935
Class 7	15	21.25	5.215
Class 8	19	24.02	4.83
Overall	53	22.65	4.678

Table 4.12 BMI data

Summary of Overall Results

Table 4.13 shows a summary of the main research findings in order for the ease of reading.

Total Physical Activity	N	*T*	*P*
Dance & FH	53	5.767	.000
Percent of MVPA			
Dance & FH	53	5.492	.000
Total Ten Min Activity			
Dance& FH	53	7.745	.000
Total MVPA Ten Min Activity			
Dance & FH	53	8.568	.000
Motor Competence			
Pre-Post Dance	19	-9.123	.000
Pre-Post Floor Hockey	19	-8.547	.000
Experience			
Pre-Post Dance	38	-2.956	.005
Pre-Post Floor Hockey	38	-5.244	.000
Self-Efficacy			
Pre-Post Dance	38	-3.040	.004
Pre-Post Floor Hockey	38	-3.163	.003
Social Situation			
Pre-Post Dance	46	-1.938	.059
Pre-Post Floor Hockey	46	-.873	.387
Outcome Expectancy Values			
Pre-Post Dance	47	-.029	.977
Pre-Post Floor Hockey	47	.679	.501

Table 4.13 Summary of Research Findings.

CHAPTER 5

DISCUSSION

Introduction

The primary purpose of this study was to examine the influence of physical activity levels on a Hip Hop dance and floor hockey unit of 6th grade students in middle school physical education. A secondary purpose was to examine how students motor competence, self-efficacy, social situation, and outcome expectancy values changed from pretest to posttest as a result of the instructional units (Hip-Hop and floor hockey). This chapter will first discuss the influence of the context on the study's findings. It will then discuss the findings of this study relative to physical activity during the two units of instruction, it will then consider how motor competence, self-efficacy, social situation, and outcome expectancy values changed across the units of instruction. The limitations of the study, the findings of the study relative to implications for teachers, and suggestions for future research will be provided.

The Context of the Study

It is first necessary to understand the context of the school in order to situate the readers understanding of the results. This school was considered "at risk" based upon academic test scores and also the socioeconomic status of the participants. The state department of education had identified the school as being in a state of "academic emergency" and at risk for loss of federal funding due to poor test scores. The middle

school had not met any of the state indicators and previously only 34.4% of 6th graders were at or above proficient level on reading and only 40.5% of the 6th graders were proficient in mathematics (Ohio Department of Education, 2006-2007). In addition, 73.3% of the students at this school were considered economically disadvantaged (Ohio Department of Education, 2006-2007). The majority (83%) of the students in the study were also African American. As a result, the population of participants in the study were identified by the CDC (2007) as a target population for physical activity interventions due to their low physical activity levels as adolescents and higher rates of chronic diseases exists in adults. Thus, the purpose of this study related to physical activity was in line with health objectives for the nation (CDC, 2007; USDHHS, 1996). Additionally, the focus of promoting MVPA within the dance unit was in line with the national goal of having 50% or more in MVPA during physical education classes.

A number of contextual factors present in the study may have influenced the findings of this study. This study took place within the structure of a 6th grade physical education class. This is important to note as physical education is a required subject in school and students do not voluntarily participate. Thus, according to SCT, there was not a volitional context for the study. That is, all the students in the study were required to participate in the dance and floor hockey units. Using SCT as the theoretical context for the study, it might be suggested that the lack of a volitional context for the students might influence the student's physical activity behaviors and other associated variables such as motor competence, self-efficacy, social situation, and outcome expectancy values. Since students were required to participate in the activity, the results may have been much different if this was a self selected physical activity (Bandura, 1986).

The middle school in which this study took place had a smaller sized gymnasium than is typical of middle school gymnasiums. The gymnasium size was similar to an elementary sized gymnasium. This seemed to have influenced the student's activity levels, especially during the floor hockey unit. For example, instead of students spreading out to move to a large open space, they only had a limited area in which to spread out. In addition, the gymnasium was only big enough for two games of floor hockey so the size of the floor hockey teams was larger than desirable. As a result, one student always played the goalie limiting the amount of physical activity that student received.

Like many schools serving children from low income and at-risk families there is frequent mobility within the school population. One contextual factor that influenced participant enrollment at the beginning of the dance unit involved enrollment decisions by the principle of the school. Due to some ongoing behavioral issues at the school the principle decided to move a number of students from one of the physical education classes to another. A number of students were moved after they had been pre-tested on dance motor competence and thus this influenced the number of participants who had full data motor competence set for dance and floor hockey units.

Another contextual factor that influenced the study was the injury of the primary physical education teacher. The primary physical education teacher injured her knee during the study and required surgery. The primary physical education teacher taught all of the dance unit and two days of the floor hockey lessons. However, she was not able to continue to teach the floor hockey unit due to her knee injury. She was replaced by an African American male substitute teacher, who was a licensed physical education teacher and had previously taught high school physical education for 15 years. Although the

substitute teacher was a licensed teacher and had experience in teaching physical education, his lack of experience with these specific students may have influenced the results. However, to counter that idea the gains in both motor competence and self-efficacy that he brought about as a result of his teaching does lend strength to the argument he is an effective teacher.

A number of these issues will be discussed in more detail in the discussion of the findings for the research questions. It is clear from undertaking this study that conducting research in this type of setting is often difficult due to the many factors out of the researcher's control.

Differences in Physical Activity between the Dance and Floor Hockey Units

The first research hypothesis suggested that a Hip Hop dance unit would result in greater physical activity levels than a floor hockey unit for 6th grade students in a middle school physical education class. Four sub-hypotheses were examined using four different measures of physical activity (average physical activity counts per lesson, average percent of MVPA, average activity counts for a designated ten-minute activity session, and average MVPA for a designated ten-minute activity session). Four different measures of physical activity were evaluated as each measure of physical activity provided a slightly different view of physical activity. Overall physical activity was evaluated by physical activity counts per minute for the entire lesson because it was necessary to normalize the data to a "per minute count" as the lessons were of slightly different lengths. Understanding the total amount of physical activity within a unit provided an important understanding of which unit gave the most amount of total physical activity.

In addition to looking at total activity across the lesson, the percent of MVPA per lesson was also calculated. National guidelines for physical activity have target MVPA as an important variable as reaching levels of MVPA is most associated with positive health outcomes (CDC, 2007; USDHHS, 1996). Also, national physical activity recommendations have identified engaging students in MVPA for 50% or more of the physical education lesson as a goal for physical education. By measuring MVPA during the lesson it allowed the researcher to determine if students were able to meet national guidelines, and to determine if one unit was more influential on MVPA over the other.

Working in a naturalistic environment such as physical education is challenging and it is often difficult to have good direct comparison of classes in one unit versus another due to factors such as variable lesson length. Thus, it was decided to use a ten minute bout of physical activity toward the end of the lesson as a standard period of time to make direct comparisons between the two units. The goal of this ten minute bout was to engage students in as much MVPA as possible. During this ten minute bout of activity both the total amount of activity and the percent of MVPA were examined. The ten minute time frame was thought beneficial as it was a controlled period of time, during which the goal was to promote as much MVPA as possible and it enabled direct comparisons between the two units.

Collecting physical activity data using accelerometers is typically problematic from a methodological standpoint in that there are often missing epochs of data (Eston, Rowlands, & Ingledew, 1998, p. 362; Janz, 1994; Sirard & Pate, 2001; Webber et al., 2008). However, as these data collection procedures only took place during the physical education class it was possible to control data collection more carefully. Thus, there was

no missing data from the accelerometers during this study. The reasons why there were no missing data could be because the accelerometers were in good condition and all had new batteries. The accelerometers had also just been calibrated from the manufacturer and thus the investigator knew that they recorded accurately. Additionally, the investigator was present for all data collection sessions. She insured that each participant put on the accelerometer correctly and at the beginning of the study regularly checked the participants to ensure compliance with appropriate placement. Thus, these data collected by the accelerometers were considered to be good physical activity data collected under stringent conditions.

The results from this study were conclusive in that consistent findings were found for all four of the physical activity measures examined. In all four cases, (total lesson physical activity, MVPA in lesson, total activity in a ten minute bout of activity, and MVPA during the ten minute bout of activity) the dance unit provided students with significantly more physical activity than the floor hockey unit. Thus, research hypothesis one was supported.

The participants in the present study were groups targeted by the Centers for Disease Control and Prevention as needing more physical activity, thus the findings for this study contributed to national physical activity goals. The participants in the study were predominantly African American and from low income, urban families who were considered "at risk." National data by the CDC (2007) of children aged 9-13 years has indicated that only 24.1% (+/-3.8) of African Americans participated in organized physical activity over a seven day period in contrast to 46.6% (+/-2.5) of white children. The findings from this study are important because it demonstrates that a Hip Hop dance

unit may be a good way to promote physical activity in an “at risk” African American population, a population identified by CDC (2007) as being in need of physical activity interventions (CDC, 2007; USDHHS, 1996). It is valuable to know that a Hip Hop dance unit was able to provide significantly more physical activity than a floor hockey unit, the possible reasons that could account for these differences in physical activity levels are explored below.

Differences in Overall Physical Activity between the Dance and Floor Hockey Units

Overall physical activity was an important variable in this study as promoting overall physical activity has been associated with optimal health and reduction of chronic disease (CDC, 2007; USDHHS, 1996). This study examined overall physical activity in regards to the average counts per lesson and average counts for a ten minute bout of activity. The results for this study indicated that for both the overall lesson and also for the designated bout of ten minutes of physical activity, dance had significantly greater overall physical activity than floor hockey. There are many possible reasons why dance had higher activity levels than floor hockey.

One area that may have accounted for the greater amount of physical activity in dance compared to floor hockey is the instructional pedagogy used in dance. The dance lessons were developed with the goal of keeping students moving and limiting wait time. The researcher also observed (but did not measure) and suggested that there was less wait time in dance compared to floor hockey. For example, a common instructional formation for dance was, the teacher having approximately six lines of students moving across the floor with different kinds of dance steps and choreography. This instructional approach resulted in limited wait time for the students in dance and higher amounts of physical

activity. In contrast, in floor hockey, a common instructional approach was to have three lines of students who would perform a drill. For example, the lead student might dribble down the gymnasium and perform a certain shot on the goal, get their puck, and stand back in line. Having longer lines and more wait time in floor hockey may have accounted for differences in physical activity levels between the two units.

Another instructional example that was not measured but observed that could have influenced physical activity levels during dance was the use of group practice. The teacher would often have a part of lesson where the entire class practiced a specific segment of the dance or skill with all students moving in unison. Although there were instances where the entire class performed the same skill in floor hockey, such as a partner passing drill, these floor hockey drills did not result in as much or as intense activity as those in dance. Overall, dance seemed to allow for many more instances of large group movement with higher levels of intense physical activity than in floor hockey. These findings were supported by the physical activity data.

It is also important to note that one of the goals of the dance unit was to increase physical activity levels and that students had many opportunities to increase activity levels. While depending on the position the students were playing in floor hockey (offense, defense, and goalie) the tactical components of floor hockey may have limited the student's ability to increase activity levels. For example, in floor hockey, usually, offensive positions are typically more active than defensive ones, and defensive positions are more active than a goalie position. Thus, the nature of having different positions within the game of floor hockey may have influenced the student's activity levels during floor hockey when compared to dance.

The researcher also noticed that skill level may have played a factor in influencing the amount of physical activity that a student got in dance compared to floor hockey. In floor hockey, a student's skill level appeared to influence his/her ability to be highly physically engaged in the unit, specifically during game play. That is, if a student were less skilled they had less likelihood of the puck being passed to them, and it was observed that lower skilled students tended to stand around and wait for the puck to be passed to them rather than move to be open. In contrast to the Hip Hop dance unit, where both high and lower skilled students were able to engage in the dance lessons and find an appropriate level of intensity based on the instructional tasks (Gieser et al., 2006; McKenzie, 2003). Thus, the area of motor competence may have influenced a student's opportunity to be active and future research should consider this issue (Stodden et al., 2008).

Dance could have also have had higher activity counts because sport has typically dominated physical education, and since this was something different than a typical sports unit, the students may have been excited to engage in this new content (McKenzie, 2003). Moreover, research has suggested that the competitive nature of team sports such as floor hockey unit may influence student's physical activity levels and that not all students enjoy competitive sports (McKenzie, 2003). In this specific school curriculum, dance was a content area that has not been typically covered by the physical education teacher.

Also, the Hip Hop dance unit appeared to be highly culturally relevant and engaging when compared to floor hockey for the poor, urban, African American students in the study (Hastie, Martin, & Buchana, 2006; Stovall, 2006; Yaussi, 2005). Anecdotal

evidence from talking to the students and observations, revealed cultural relevancy and the high motivation students had to engage in the Hip Hop dance unit, when compared to the floor hockey unit. Thus, motivation to engage in the Hip Hop dance unit may have been higher for dance than for floor hockey because of the culturally relevancy, thus positively influencing student's physical activity levels (Grieser, 2006). Future research should examine issues surrounding motivation to engage in specific units of instruction and the culturally relevancy of the content for activities such as dance or floor hockey.

Ten Minute Bout of Physical Activity.

One of the instructional lesson plan elements added to this study to promote physical activity was the implementation of a ten minute bout of physical activity toward the end of the lesson. The goal of this part of the lesson was to maximize both overall activity and MVPA. In the dance unit, this consisted mainly of practicing the learned dance moves with all students being active and engaged in physical activity. In the floor hockey unit, this consisted of playing a floor hockey game. As with overall activity for the lesson, the activity counts in the ten minute physical activity session were higher for dance than floor hockey.

It was believed that the instructional nature of the ten minute dance bout provided students with more activity over longer periods of time and also with more intensity. For example, everyone performed the segment of the dance regardless of their skill level. Since the researcher believed that skill level did not seem to influence a student's ability to engage in the tasks, students were able to attempt the dance moves for all of the ten minutes. Often, if a dance move was a little too hard for a student, she/he just modified

the move to something that was within his/her ability. In comparison, during the floor hockey ten minute session the students were engaged in a floor hockey game.

During the floor hockey game play, there was a lot of standing around, limiting physical activity levels. As indicated above, this may be because students had limited tactical and motor skills. The position that a student played within the floor hockey game seemed to influence a student's activity levels. For example, offensive players were more active than defensive players, and defensive players more active than goalies.

Additionally, the small size of the gymnasium (equivalent to an elementary sized gymnasium) limited the floor hockey playing area and how much space the students had to play the floor hockey game. For example, sometimes there were as many as ten students in half of the gymnasium, making it difficult for all students to be moving rapidly and be involved in all aspects of the floor hockey game. Also with the limited space, one person in the floor hockey game was designated to be the goalie, which limited physical activity levels for the person in that position. All of these factors may have influenced the ability to promote physical activity within floor hockey and may have accounted for the differences in physical activity between dance and floor hockey for the ten minute bout of activity.

The researcher believed that both units of instruction got reasonable physical activity levels. During the ten minute bout of physical activity the average dance activity counts were 2,504.85 and the average floor hockey counts 1,289.816 per minute. The activity counts from dance and floor hockey were somewhat less than the activity counts from the Take 10! Study (Stewart, Dennison, Kohl, & Doyle, 2004). Take 10! was a classroom based physical activity intervention, in which the average activity counts per

minute for a ten-minute activity session for three different grades (1^{st}, 3^{rd}, 5^{th}) were 2,931, 3,443, and 3,872 respectively (Stewart, Dennison, Kohl, & Doyle, 2004). The greater activity counts in Take 10! might be associated with the variable length of the 10 minute bout in that study (9.5 to 11.3 minutes).

This study was a within-subjects design where the students participated in each unit (dance and floor hockey) and thus acted as their own controls. It was not possible within the scope of the present study to conduct a large randomized group design, thus the within subjects design used in this study provided some strength relative to the findings. Additionally, having four different measures of physical activity provided an opportunity to examine if intervention effects stayed consistent over the four different measures of physical activity. Despite the limited scope of the study, it was believed that the physical activity findings were trustworthy and notable.

Differences in MVPA between the Dance and Floor Hockey Units

Moderate to vigorous physical activity levels were important to determine because MVPA is tied to many health benefits (USDHHS, 1996). In addition, having high levels of MVPA is tied to national health goals. For example, the CDC (2007) recommends that individuals receive at least 30 minutes of moderate physical activity on five or more days a week. In addition, daily physical activity levels should include MVPA and VPA (CDC, 2007; Story, Kaphingst, & French, 2006, p. 119). It is also a national goal that students engage in MVPA for 50% or more of the physical education lessons to positively influence overall health (USDHHS, 1996).

The physical activity data relative to percent of MVPA in the overall lesson revealed that in the dance unit students were engaged in MVPA for 46% of time and for the floor hockey unit they were engaged in MVPA 34% of the lesson. The average dance lesson was 39.7 minutes long and the average floor hockey lesson 39.4 minutes long. This means that on average the students were engaged in MVPA for 18.262 minutes in dance and 13.396 minutes in floor hockey. Thus, in both units of instruction students did not get the recommended 30 minutes or more of MVPA. However, the findings of the study indicated that there were significant differences between dance and floor hockey relative to the percent of MVPA in the overall lesson. Although students were not able to meet national guidelines of 50% or more of the lesson in MVPA, the findings from this study align with those in the literature. A number of intervention studies promoting MVPA have failed to meet the physical activity guidelines of 50% or more in MVPA during physical education (McKenzie et al., 1995; Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hare, 1991). In the Simons-Morton et al. (1991) study they were able to increase MVPA from 10% to 40% of the lesson. The 40% found in the Simons-Morton et al. (1991) study is similar to the findings for dance, in which 46% of the lesson was in MVPA. McKenzie et al.'s (1995) study found elementary children were engaged in MVPA for 36% of the class time. This is similar to the 34% of MVPA found for the floor hockey unit of instruction.

The Hip Hop dance unit more effectively promoted MVPA for both the overall lesson and the ten minute activity bout at the end of the lesson. The possible reasons as to why this happened are most likely similar to those for overall physical activity.

During the ten minute activity session at the end of the lesson students engaged in MVPA 61% of the time in dance and 31.9% of the time in the floor hockey unit. It is during this ten minute bout of activity the differences between dance and floor hockey are most evident. There were substantial differences in the way the ten minute bout was implemented between the dance and floor hockey lessons. In the dance unit the teacher had all of the students practice the dance many times though. During the practice of the dance routine, the students would learn the segments and engage in short bouts (approximately two minutes) of physical activity as they practiced a specific part of the dance. These two minute bouts were repeated immediately after they ended. This approach may have allowed the students to engage at higher intensity levels of physical activity and may in part account for the findings. In addition, when the students were practicing the dance, there was very little standing around because the nature of Hip-Hop dance included lots of movement. When compared to the floor hockey unit, the teacher had the students engage in continuous game play, where there was lots of standing around, limiting the physical activity levels of the students. Typically, any student who got the puck during the floor hockey game would run for a short five to ten second burst with the puck, then pass it and stop moving. Thus, the nature of the dance unit provided for better MVPA during the ten minute bout of activity than did floor hockey game play.

In summary, the findings relative to physical activity were conclusive with all four measures of physical activity in dance having significantly higher physical activity levels compared to floor hockey. Social cognitive theory was used as the theoretical foundation of the dance unit and may have accounted in part for the physical activity

findings of this study. A discussion of SCT and those secondary dependent variables measured in the study are discussed below.

The Use of SCT in Promoting Physical Activity within the Units

This study was situated within social cognitive theory (SCT). Although many other studies have used SCT to promote physical activity (Gortmaker et al., 1999; McKenzie et al., 1995; McKenzie et al., 2004; Simons-Morton, Baranowski, Forthofer, & O'Hare, 1991; Webber et al., 2008), this study was unique in that a number of secondary variables were measured in addition to physical activity. These secondary dependent variables included motor competence, self-efficacy, social situation, and outcome expectancy values and were believed to be most pertinent to a better understanding and back drop to the physical activity data. Social Cognitive Theory was used to theoretically develop the lesson plans for the dance unit. This was necessary because secondary variables associated with SCT have been reported in the literature as potentially influencing overall physical activity and MVPA (Bandura, 1986). When developing the dance units the lesson plans intentionally included peer and teacher modeling, opportunities to respond, challenging tasks, and motivating music. By including these elements in the lesson plans, and using SCT it possibly reinforced the link between behavioral and personal/ cognitive factors associated with the secondary variables used in the study. Specifically, the use of these elements in the lesson plan were believed to target improvements in motor competence, self-efficacy, social situation and outcome expectancy values. The next section will examine how the four secondary variables (motor competence, self-efficacy, social situation, and outcome expectancy values)

changed across the units of instruction and discuss the theoretical elements to these variables.

Motor Competence

It was necessary to strive to increase behavioral factors when designing and implementing the lesson plans for the units of instruction. A component of behavioral factors is motor competence (Bandura, 1986). Motor competence is the skill students have to perform a given activity in a specific situation (Schmidt & Wrisberg, 2004). Motor competence is important because research has suggested that an individual's motor skills impact their physical activity levels (Dylan, Wi Okelya, Micklec, & Steela, 2007; Pangrazi & Dawer, 1992; Stodden et al., 2008; Wrotniak, Epstin, Dorn, Jones, & Kondilis, 2006). Stodden et al. (2008) have suggested that low levels of motor competence will negatively impact physical activity levels. While Bandrua (1986) also states that motor competence or mastery experience also influences activity and self-efficacy levels. That is, a child who has a low skill level may not successfully apply his/her skills in a physical activity setting and thus may be less active. Thus, motor competence was tracked from pretest to posttest as part of this study.

The results of this study revealed that motor competence improved from pretest to posttest for both the dance and floor hockey units of instruction. For the dance unit the motor competence means changed from 1.53 to 3.32 out of a total possible four points. The floor hockey unit motor competence means changed from 2.32 to 3.63, out of four points, demonstrating significant improvements in both dance and floor hockey motor competence. Based on these findings it would appear that the lesson plans and the two

teachers implementation of them were effective in bringing about skill improvement in the skills of the unit.

Each lesson for the unit was developed with two primary goals associated with SCT. The first was to increase physical activity and the second to promote motor skill development associated with the unit. Prior to the pretest measures, students were shown a videotape of the dance or floor hockey skills that would be taught across the unit and then tested on those skills. Based on the findings the students had limited skills and motor competence at the pre-assessment. The slightly higher score for floor hockey might represent the observation that the students had some prior experience with floor hockey within elementary physical education but less experience with dance and specifically Hip Hop dance.

The findings from the study revealed that in both the dance and floor hockey units, there was a significant increase in motor competence from pretest to posttest. Thus, it was inferred that quality instruction was provided for both units since motor competence improved in both cases. The measurement of motor competence across a physical activity intervention is a unique element to this study as the majority of physical activity interventions have not looked at how individuals motor competence changed across the intervention (Stone, McKenzie, Welk, & Booth, 1998). Thus, by measuring motor competence in addition to physical activity, this gives strength to the intervention integrity and the physical activity data.

Moreover, there were several aspects of quality instruction embedded into the instructional plans to improve motor competence. These measures include skill feedback, opportunities to respond, and demonstrations (Rink, 2006). One quality instructional

strategy that was used was feedback in the form of knowledge of results and knowledge of performance (Rink, 2006; Schmidt & Wrisberg, 2004). Bandura (1986) stated that feedback is an important aspect of learning because this influences students "real" notion of their skill levels. The predominant type of feedback in the lessons was knowledge of performance provided in the dance unit and was used so students had a clear perspective of their actual skills (Bandura, 1986). For example, the teacher might provide feedback on the correctness of the steps, the position of the body, or whether the movement was aligned with the music (Rink, 2006; Schmidt & Wrisberg, 2004). In floor hockey both knowledge of results and performance was provided. Also the teacher often provided feedback on the technical aspects of a pass or shot and knowledge of results was provided in the form of outcomes such as scoring a hockey goal (Rink, 2006, p. 29). Both types of feedback have been associated with improvements in motor competence (Rink, 2006; Schmidt & Wrisberg, 2004) and may have partially accounted for the improvement in motor competence. Based on the literature feedback is an important variable but the amount and type of feedback was not measured in the present study, thus is a weakness to this study. Future research should attempt to measure the amount and type of feedback provided across the intervention.

Another common element to promote motor competence in the lesson plans was providing for multiple opportunities to respond on specific tasks or what Bandrua (1986) terms mastery climate repetition. Opportunities to respond (OTRs) are the number of times students have to respond to performing the task (Rink, 2006). A weakness of this study was the fact that OTRs were not measured and thus it is not known how OTRs influenced the ability to learn motor skills. It appeared from observations of the dance

and floor hockey lessons to be easier to get more OTRs in dance than in floor hockey. This is an important observation because when students have more OTRs their motor competence potentially increases, which increases student's persistence in an activity, which then increases their skill levels. An observed example of this was during the ten minute dance segment in the lesson in which students would practice the dance as many as three times though. In contrast, in the floor hockey lessons, students might only get two to three chances to perform a shot on goal during the games. The observed practice or OTRs aligns with SCT, in that when students are able to cognitively practice a skill, their skill levels will often improve (Bandura, 1986). Bandura (1986) also states that when students have higher OTRs, this impacts motor competence and self-efficacy and results in higher functioning in both domains of learning. Future research needs to examine this issue concerning OTRs and skill improvements.

Other aspects of effective instruction that were built into the instruction of the unit included demonstrations (Rink, 2006) or what Bandura (1986) would term modeling. Modeling was provided by the media, peers, and teacher during the dance unit and by peers and the teacher during the floor hockey unit. By providing students with models in both units, this possibly provided multiple sources of information for the learners (Rink, 2006, p. 100). Moreover, not only do models provide the verbal aspect of learning the task, but they also provide a visual representation of what the skill and/or task is supposed to look like, which could have enhanced learning and increased students overall motor competence scores (Rink, 2006, p. 100).

Motor competence was believed to be an important secondary variable to measure because it has been tied to physical activity levels in the literature and is associated with SCT (Rink, 2006; Schmidt & Wrisberg, 2004). Researchers have suggested that when students have higher levels of motor competence, they may have increased physical activity levels also (Stodden et al., 2008). Future research needs to explore the relationship between motor competence and physical activity.

Self-Efficacy

Self-efficacy is the student's belief they can be successful in a specific activity (Bandura, 1986). To increase personal/ cognitive factors one must engage in successful practice or engage in mastery experiences at an appropriate level of challenge to improve self-efficacy (Bandura, 1986). Self-efficacy is a major variable under the area of personal/ cognitive factors in SCT (Bandura, 1986). Self-efficacy is important and was a necessary variable to measure because research suggests that as self-efficacy increases so do physical activity and motor competence levels (Bandura, 1986; Stodden et al., 2008). The findings from the self-efficacy data indicated that in both the dance and floor hockey units significant increases in self-efficacy occurred from pretest to posttest.

The pretest to posttest self-efficacy scores went from 22 to 24.18 for dance, and from 21.53 to 23.55 for floor hockey. There are many reasons that could account for the increases in self-efficacy. One possible reason for the increase in self-efficacy across the dance unit was that there were strategies built into the instructional lessons to promote self-efficacy. These instructional strategies for dance included peer modeling, peer teaching, provision of feedback, and a final group performance. The instructional

activities to promote self-efficacy in floor hockey included peer teaching, feedback and floor hockey games at the end of the lessons.

Peer modeling is when peers model tasks for each other (Rink, 2006). Peer modeling was a possible strategy used to increase self-efficacy in dance and was implemented in the lessons (Bandura, 1986). To include peer modeling in the dance lessons, peers performed a given task to each other in groups, then the other students learned the tasks by trying to replicate the skills the peers modeled. There were many indicators that students were improving with their dance skills based on peer modeling tasks. This was demonstrated by having students continually practicing the dance skills. When students would continually practice these skills they would be very persistent on performing the task. These students were often willing to try new skills/drills to improve their skill levels, and therefore their success could have contributed to increases in self-efficacy scores. Also, the students would call on each other to learn a new skill and seemed to enjoy having peers as models and teachers.

One of the culminating tasks for the dance unit was a final dance performance. This appeared to be a highly motivating goal for the students and it may have increased their self-efficacy across the unit. Having students complete a final performance may have helped motivate the students and provided evidence to them that they had improved and they could now complete the entire dance. In addition, throughout the dance lessons students were able to practice the skills many times, thus practicing these skills for their final performance may have lead to skill improvements, which could have accounted for possible increases in self-efficacy.

Another factor that could have increased their self-efficacy in the dance and floor hockey lessons were the amount of times students were allowed opportunities to practice skills, which was leading to mastery experiences. At the end of the lessons students were allowed to practice ten minutes of the learned skills for both instructional units. By allowing students to practice their dance and floor hockey skills, they may have improved their confidence to practice these skills, thus their skill levels improved, resulting in a possible increase in self-efficacy and motor competence. Additionally, this aligns with SCT, in that when students are able to practice a cognitive skill, their competence increases, which in turn often increases their self-efficacy (Bandura, 1986). Physical activity levels may be tied in to improvements in self-efficacy in the following way. Increased physical activity levels provides more opportunities for practice of skills which in turn provides more opportunities to learn skills. As skills improve, often self-efficacy also improves (Bandura, 1986). Thus, students feel better about their skill levels and then continue to persist in the activity and the positive cycle repeats itself. Stodden et al., (2008) referred to this a positive spiral of engagement where higher motor competence and self-efficacy promote more of the same.

In terms of instructional pedagogy, feedback was implemented in the lessons to promote self-efficacy and motor competence. Aside from knowledge of results and performance, other types of feedback included general, specific, positive, class, group, individual, corrective, contingent, and incongruent (Rink, 2006, p. 169). Using these types of feedback could have possibly led to increases in self-efficacy across both instructional units.

Relationship of Motor Competence and Self-efficacy to Physical Activity

The ability to change self-efficacy bodes well for the development of future physical activity interventions. The combination of improving motor competence and self-efficacy within the units of instruction should theoretically result in greater levels of physical activity in the future (Stodden et al., 2008). According to Bandura (1986) when students have increased motor competence, they have increased self-efficacy. The reason for this is that individuals cannot have positive mastery experiences if they fail (Bandura, 1986). Students typically have positive mastery experiences, which positively influences motor competence and self-efficacy levels, because of their improved skills (Bandura, 1986).

Moreover, the significant and positive changes in motor competence and self-efficacy provide further evidence that the physical activity intervention was implemented with good intervention efficacy and that both of the teachers who were involved in the implementation of the units of instruction were effective instructors. Future research needs to examine this issue among motor competence, self-efficacy, and physical activity levels.

Social Situation

Another personal/ cognitive aspect of SCT is social situation. This study aimed to increase social situations, in other words, peer support of physical activity during the dance unit. Social situation is the influence students have from peers to participate in an activity (Berk, 2003) with similar interest (Urberg, 1999). Social situation is important because peers can influence the types of activities students do in their free time (Berk, 2003). Students who are involved in higher levels of physical activity tend to have peers

who are also involved in similar physical activity levels (Slavy et al., 2007). Research has suggested there is a link between physical activity levels and social support (Anderson & Wold, 1992; Berk, 2003; McKenzie et al., 2006; Slavey et al., 2007).

A number of strategies were utilized to promote social situations for the dance unit. Peer support was embedded within the dance lesson plans. Peer support was demonstrated by allowing group work that included peer teaching and peer modeling. Peer teaching and modeling, was present when students were allocated time to work together learning dance moves and teaching each other dance skills. The intent of this work was to promote dialogue and interaction between peers and hopefully to promote social situation.

The teacher also promoted peer support in the floor hockey lesson plans by having students work together in teams. Students responded in the floor hockey lessons by discussing passing routes or strategies in which they could score a goal. Many times students would call out a team members name to indicate they were going to pass the puck. Students would also call out the name of team members who had the puck, so they could get a pass, indicating to the person with the puck they were open.

Teacher promoted peer support was different between dance and floor hockey lessons because in the dance unit all students were striving to meet the same goal, learning the dance to be able to perform for the final performance. The floor hockey unit was competitive in nature, and although the students were in teams working together, they were against another team that was trying to score more points.

Despite the intent to positively impact social support, the findings from this study were not supportive of this research hypothesis, indicating no significant increases in social situation from pretest to posttest. The results for the dance social situation improvement scores for dance were 34.48 to 38.11. The floor hockey social situation scores were 36.78 and 38.59. It may be that a limited timeframe, cohort effects, and possibly the age of the students influenced these findings.

One reason that could account for limited changes across the lessons for social situations was the fact that this study could have been too short for peers to play an important role in social situations. Each unit of instruction was only 11 days long. Although there were opportunities for peer interaction, in the future one may need to target this variable more carefully and over a more extensive period of time in order to impact change. In the present study increasing social situations was not the primary intent of the intervention, the primary intent was to increase physical activity levels, thus this could also account for limited changes across both instructional units.

Another reason that could account for the limited changes might be due to possible cohort effects. The students in this study came from a variety of elementary schools and were new to the middle school so for many of them they had new peers and friends and were just getting to know each other. In addition, this study took place at the beginning of the school year and was the student's first experience in middle school. Maybe peers were just starting to play a role in each others life and they were not as significant as in higher grades. Additionally, the students in this study were around 12 years old, and the research literature suggests that peer influences are typically stronger among older adolescents (Ward, Saunders, & Pate, 2007).

Although a secondary intent of the intervention was tailored to impact social situation, yet there were no changes in social situation, it could be because of what SCT suggests concerning social situations. According to SCT, social situations plays an important role in influencing activity levels (Bandura, 1998). However, according to Bandura (1998) studies need to not only tailor social situation in schools but also the community and the home life of the students if they are to impact change in social situation and promote physical activity levels. Students also need to be supported by peers to engage in activity, if students are not supported by each other about healthy behaviors, then peers could negatively influence student's activity levels (Bandura, 1998).

Outcome Expectancy Values

The last personal/ cognitive construct of SCT that was targeted as a secondary variable was outcome expectancy values. Outcome expectancy values are the outcomes student expect engaging in an activity, and if they value these outcomes. Outcome expectancy values were an important secondary variable to measure because the research literature has suggested that outcome expectancy values are tied to physical activity levels (Winters, 2001). The assumption in outcome expectancy is that knowledge of an outcome will influence a person's willingness to engage in the activity assuming that the person also values that outcome (Winters, 2001). That is, knowledge of the positive effects of physical activity and valuing physical activity should result in a person engaging in more physical activity (Hortz, Winters, Petosa, & Grim. 2007).

This study hypothesized that outcome expectancy values would significantly change from pretest to posttest for 6th grade students in a Hip Hop dance and floor hockey unit. The findings from this study provided no support for this hypothesis, that is, there were no significant pretest to posttest increases in dance and floor hockey outcome expectancy values. The pretest to posttest dance scores actually slightly dropped from 407.45 to 407.06, while the floor hockey scores dropped slightly from 395.34 to 382.26.

When describing outcome expectancy values it is important to remember it is composed of two parts. The first part is what students expect will happen from participating in an activity, and the second part is if students value these behaviors. The first part of outcome expectancy values, what the student expects from engaging in the activity, was communicated to the students by explaining the goals of the unit and each individual lesson plan. The students were told that they were to participate in a ten minute warm-up and a ten minute bout of continuous activity at the end of the lesson during both instructional units in order to increase activity levels. Students were also told their activity levels were being measured via accelerometers.

The second part of outcome expectancy values, is the actual value the students placed on the outcome of the behavior. Values are culturally determined and are made up of many different aspects of the person. A value an individual has is typically influenced by factors such as personal experiences, peer values, cultural values and norms (Hellison, 2003). In all reality it is difficult to expect to impact a student's value system in the limited timeframe in which the study was conducted. In order to impact student's values, researchers and teachers need a longer period of time, with many positive experiences to

make a difference. Therefore, it is not surprising that there were no changes in outcome expectancy values.

One possible reason that could account for the lack of improvement in outcome expectancy values is that in 6th grade many students are limited in the knowledge they have about healthy behaviors. Since the outcome expectancy values scale measured student's healthy behaviors and their values of these behaviors (Winters, 2001), the students may not know or understand what healthy behaviors are. If students do not know what healthy behaviors are it makes it difficult to value or measure something one is not knowledgeable about. The limited knowledge could also tie to Kohlberg's theory of moral development theory because 6th graders are still figuring out what they value, and thus they may not have strong value sets in this area (Kohlberg, 1973).

Moreover, from a value system standpoint, there is a strong influence of Hip Hop dance, media icons, and culturally relevancy. It seemed to the researcher that Hip Hop dance should be more likely to impact outcome expectancy values with students than a floor hockey unit, since students were able to relate to this activity. However, the non-significant findings from pretest to posttest in outcome expectancy values for dance and floor hockey did not support this view. However, further research needs to examine this issue.

Impacting outcome expectancy values is a complex process according to SCT (Bandura, 1986). The research in the literature that was able to change outcome expectancy values was substantially longer than the current study and involved an entire year's intervention. Thus, it is not surprising there were no significant differences in outcome expectancy values within the present study (Dishman et al., 2004). Changing

outcome expectancy values is a slow process, since it is difficult to change someone's value of an activity. Outcome expectancy values, regulates an individuals motivation and behaviors (Bandura, 1998) which were difficult to influence over an 11 lesson unit.

In conclusion, using SCT helped aid in the development of the research study. It is also important to note that from the literature review, there have been no other studies similar to the research conducted for this study. Many times in physical education, it is difficult to target all of these constructs and positively implement such a curriculum in such a diverse and typical physical education setting. The findings from this study also yield strength, indicating that dance had significantly higher physical activity levels for all four measures of physical activity when compared to floor hockey. While there were significant increases in motor competence and self-efficacy levels. This researcher believes the theoretical development of the physical activity intervention using SCT aided in achieving the physical activity findings in this study.

Limitations to the Study

There were a number of aspects to this study for which the researcher did not have any control and acted as limitations of the study.

1. The instructional lessons and units were short in duration (11 days) limiting the amount of time students spent in the content and lessons.
2. There were two different teachers who implemented the two different instructional lessons. The female teacher implemented all the dance lessons, while the male teacher implemented majority of the floor hockey lessons. There is a possibility teacher effects influenced the findings.

3. Teacher effects were not measured and were difficult to determine how they influenced the dance verses the floor hockey unit.

4. The students had a number of chances to experience learning the dances and practicing the floor hockey skills, although it was not known the exact amount of opportunities to respond or the amount of feedback students got within each unit of instruction.

5. There were many behavioral issues within both units of instruction necessitating the teacher to stop the lesson, thus taking time away from the learning process. For example, there were numerous fist fight fights in class, as a result of the fights a number of times student were suspended from school and missing data resulted from the suspension.

6. Students in these schools also had a high number of days in which they were absent, for example, one student participating in the study missed over 15 days of school from the start to finish of the study. Students in these schools were constantly moving for many reasons, making the learning and research process difficult.

7. The gymnasium size was similar to an elementary gymnasium, which limited the space students had to practice and play the floor hockey game. For example, sometimes as many as ten people were in half of the gymnasium and it made it difficult for all students to be involved in all aspects of the floor hockey games.

Implications for Teachers

The implications to teachers are the following:

1. The results of this study indicate that Hip Hop dance is a great activity for middle school physical education curriculum, especially if one is trying to promote overall physical activity and MVPA.

2. SCT is a useful in designing lesson plans by including secondary variables (motor competence, self-efficacy, social situation, and outcome expectancy values) and developing the physical activity intervention to increase physical activity levels.

3. When developing physical activity lesson plans to increase overall physical activity and MVPA it is necessary to allocate time to practice dance skills.

4. Since student's motor competence levels were increased from pretest to posttest it is important to ensure teachers allocate time for students to practice the learned skills (Rink, 2006). If students in this study were limited in their opportunities to practice the skills learned, the outcomes might have been much different. Allowing students to practice learned skills increases skill level and is an important part of physical education (Rink, 2003).

5. Self-efficacy also improved in this study, thus in the future teachers could possibly promote self-efficacy by including in their lesson plans peer modeling, final group performance, or final games.

6. When selecting and developing the physical education curriculum it is necessary to choose activities that are culturally relevant, highly engaging, and motivating for students. When developing the physical education curriculum, teachers need to think of the students as consumers, who need options and opportunities to engage in physical activity (McKenzie, 2003).

7. To increase activity levels in floor hockey during game play the teacher should have no more than three people to a floor hockey team. This would possibly allow for increases in opportunities to respond and space for students to spread out and engage in the floor hockey lessons.

8. When implementing lessons, teachers should use peer and media modeling to promote self-efficacy and possibly motivate students to engage in the lessons.

9. When implementing a dance unit, it is necessary to discuss with students the different music that is popular during the time of dance implementation.

Suggestions for Future Research-

Below are the suggestions for future research:

1. Conduct a large scale, multi-site, randomized replication of the study to determine if these effects hold true across the different populations.

2. Future research should use different lesson content that is culturally relevant to students (for example, using basketball instead of floor hockey).

3. Researchers could also have a longitudinal study that would look at relationship of motor competence and self-efficacy on physical activity levels over time.

4. In the future it is necessary to implement this same study but have longer units of instruction and the same teacher implementing each unit of instruction.

5. Future research should have a large enough sample size to add a gender comparison as a research question to answer. It is known from the literature that girls are less active than boys as a segment of the population (McKenzie, 2003) and girls tend to have lower motor skills than boys (Schmidt & Wrisberg, 2004). Thus, examining the findings of the study by gender would be valuable.

6. When aligning the study with SCT, it is also necessary to measure other secondary variables associated with physical activity levels. These other secondary variables that could be explored include coping, self-control, social and physical environment.

7. Future research should focus on finding ways in which students are motivated to engage in high levels of physical activity. Motivation can possibly influence activity levels, thus is another variable to explore (Rink, 2006).

8. Researchers need to also determine how to positively influence social support and outcome expectancy values to increase physical activity levels.

9. Future research should examine the role that the size of the playing areas or gymnasium size has on the ability to promote physical activity in team sports.

10. Research should also choose warm-up activities that are highly motivating and increase activity levels.

Summary

Increasing physical activity levels is currently a difficult process and teachers must realize the importance of this process to positively effect students overall health (Graf, Predel, Tokarski, & Dorel, 2006; Paxson, Donahue, Orleans, & Grisso, 2006; Trust for America's Health, 2007). The primary purpose of this study was to examine the influence of two different units of instruction (Hip Hop dance and floor hockey) on the total physical activity levels and MVPA of 6th grade students in middle school physical education.

The results of this study found that for all four measures of physical activity, dance had significantly more physical activity than floor hockey. More specifically, the dance unit had 46% of MVPA for the overall lesson and 61% for the ten minute bout of physical activity. In contrast, floor hockey had 34% of MVPA for the overall lesson and 31.9% for the ten minute bout of physical activity. None of these findings met the national goal to have 50% of the lesson in MVPA. Increases in physical activity levels

with “at risk” populations is a challenging task, which researchers and teachers alike must work diligently to strive to achieve the goal of increasing physical activity levels.

Physical activity levels are influenced by a variety of secondary variables and include motor competence, self-efficacy, social situation, and outcome expectancy values (Bandura, 1998, 2004). Therefore, a secondary purpose to this study was to examine changes in motor competence, self-efficacy, social situation, and outcome expectancy values from pretest to posttest as a result of the dance or floor hockey instructional unit. Results indicated that students significantly improved in their motor competence and self-efficacy from pretest to posttest. Results also indicated that students did not significantly improve their social situation and outcome expectancy values from pretest to posttest in dance and floor hockey. Overall, this study concluded that a Hip Hop dance unit is an effective means to promote physical activity within the middle school physical education curriculum.

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APPENDIX A

HUMAN SUBJECTS INSTITUTIONAL REVIEW BOARD APPROVAL TO CONDUCT RESEARCH

THE OHIO STATE UNIVERSITY

Behavioral and Social Sciences Institutional Review Board

Office of Responsible Research Practices
300 Research Foundation
1960 Kenny Road
Columbus, OH 43210-1063

Phone (614) 688-8457
Fax (614) 688-0366
www.orrp.osu.edu

October 5, 2007

Protocol Number:	**2007B0240**
Protocol Title:	**DIFFERENCES IN PHYSICAL ACTIVITY BETWEEN A HIP-HOP DANCE UNIT AND A FLOOR HOCKEY UNIT IN A MIDDLE SCHOOL PHYSICAL EDUCATION PROGRAM, Jacqueline Goodway, Jessica Stevens, Physical Activity & Educational Services**
Type of Review:	Initial – Expedited
IRB Staff Contact:	Jacob R Stoddard Phone: 614-247-1562 Email: stoddard.13@osu.edu

Dear Dr. Goodway,

The Behavioral IRB **APPROVED BY EXPEDITED REVIEW** the above referenced protocol. The Board was able to provide expedited approval under 45 CFR 46.110(b)(1) because the research presents minimal risk to subjects and qualifies under the expedited review category(s) listed below.

Date of IRB Approval:	**October 5, 2007**
Date of IRB Approval Expiration:	**October 5, 2008**
Expedited Review Category:	**7**

In addition; the protocol has been reapproved/approved for the inclusion of children (permission of one parent sufficient).

If applicable, informed consent (and HIPAA research authorization) must be obtained from subjects or their legally authorized representatives and documented prior to research involvement. The IRB-approved consent form and process must be used. Changes in the research (e.g., recruitment procedures, advertisements, enrollment numbers, etc.) or informed consent process must be approved by the IRB before they are implemented (except where necessary to eliminate apparent immediate hazards to subjects).

This approval is valid for **one year** from the date of IRB review when approval is granted or modifications are required. The approval will no longer be in effect on the date listed above as the IRB expiration date. A Continuing Review application must be approved within this interval to avoid expiration of IRB approval and cessation of all research activities. A final report must be provided to the IRB and all records relating to the research (including signed consent forms) must be retained and available for audit for at least 3 years after the research has ended.

It is the responsibility of the investigator to promptly report to the IRB any serious, unexpected and related adverse events or potential unanticipated problems involving risks to subjects or others.

This approval is issued under The Ohio State University's OHRP Federalwide Assurance #00006378.
All forms and procedures can be found on the ORRP website – www.orrp.osu.edu. Please feel free to contact the IRB staff contact listed above with any questions or concerns.

Shari R. Speer, PhD, Chair
Behavioral and Social Sciences Institutional Review Board

Exp Approval New CR
Version 11/21/06

APPENDIX B

SAMPLE PARENT PERMISSION TEMPLATE

The Ohio State University Parental Permission For Child's Participation in Research

Study Title: Differences in Physical activity between a hip-hop dance unit and a hockey unit in a middle school physical education program.

Researcher: Jacquleine D. Goodway

Sponsor: **n/a**

This is a parental permission form for research participation. It contains important information about this study and what to expect if you permit your child to participate.

Your child's participation is voluntary.

Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to permit your child to participate. If you permit your child to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:
In the past few years there has been a lot of publicity on childhood obesity and the importance of physical activity in reducing obesity. We are interested in learning about the physical activity levels of children in schools as children spend much of their day at school. Research has suggested that as children get older they get less active and that girls are less active than boys. As a result, you are being asked to allow your child to participate in a study called: *Differences in Physical activity between a hip-hop dance unit and a floor hockey unit in a middle school physical education program.* The primary purpose of this study is to examine two different instructional curriculum units (dance and a floor hockey) on the physical activity levels of middle school students in a physical education class.

Procedures/Tasks:
The following measures will be taken during your child's physical education lessons:
<u>Accelerometers</u>
Accelerometers are devices similar to pedometers that children will wear during physical education. These devices are a small little box that will clip onto the children's waist or on an elastic belt and will be worn on the right hip. These small devices will be used to measure physical activity based on the movement of the child during your child's dance and floor hockey unit.

<u>BMI</u>
Prior research on physical activity has also suggested that body mass index (BMI) is an important factor in the physical activity of children with those having higher BMI's tending to be less active (Ward, Saunder, & Pate, 2007). Thus, height in cm, and weight in kilograms will be individually measured in a secluded area of the gymnasium by a trained investigator. Body Mass Index (BMI) will be calculated from these measurements.

Social Support Modified Scale

The social support modified scale will be used to determine the social support students have with friends when dancing or playing a floor hockey. There are 13 questions and an example is as follows:

none 1	rarely 2	a few times 3	often 4	very often 5	does not apply

My friends: Friends

11. Gave me encouragement to practice my dance routine 11. _____

Expected Outcome Scale

The expected outcome scale will be used to determine what the students expect from the unit outcomes and their value of outcomes. There are 25 questions on the scale. An example of the question is as follows:

I think dance will,

1. relieve my stress 1 2 3 4 5 6

Stress reduction is important to me.

Never Rarely Occasionally Often Usually Always

Actual Motor Competence

Actual motor competence will be evaluated by videotaping students for the first and last lessons for dance and a floor hockey unit. Specific skills such as dance steps in the dance unit and dribbling, passing, shooting, defense, and offense will be evaluated using a teacher checklist.

Susan Harter's Athletic Competence

This scale examines the student's perceived athletic competence and is 6 questions long. This scale is evaluated in the form of a questionnaire, which student's rate from one through four. An example of a question is below:

Really True For Me	Sort of True For Me			Sort of True For Me	Really True For Me
		me kids do very well all kinds of dance	BUT Other kids don't feel that they are very good when it comes to dance		

This scale is for children 8-13 years of age and will take approximately 10 minutes to administer.

The activities your child will be participating in will be during physical education class and will have no greater risk of injury than a typical day at school. Your child and teacher will benefit

from this study by learning about and improving his/her physical activity levels, social support, expected outcomes, self perceptions, and skills levels. Results of the findings of this study will be summarized for your child's physical education teacher so she can best plan for future students in her classes.

Duration:
Your child may leave the study at any time. If you or your child decides to stop participation in the study, there will be no penalty and neither you nor your child will lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:
The results from this research will provide the teacher with specific information about the amount of physical activity student achieve in a dance unit as compared to a floor hockey unit. It will also enable her to understand the role mediating variables such as actual motor competence, perceived athletic competence, social support, and expected outcomes play in influencing the physical activity levels of 6th grade students in two different instructional units. These data will assist the teacher in tailoring physical education curriculum to the students needs and national physical activity guidelines.

Confidentiality:
Efforts will be made to keep your child's study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your child's participation in this study may be disclosed if required by state law. Also, your child's records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:
None

You or your child may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you or your child is a student or employee at Ohio State, your decision will not affect your grades or employment status.

Participant Rights:
If you and your child choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights your child may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

For questions, concerns, or complaints about the study you may contact Dr. Jackie Goodway at 1-(614) 292-8393 or email goodway-shiebler.1@osu.edu.

Contacts and Questions: For questions about your child's rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If your child is injured as a result of participating in this study or for questions about a study-related injury, you may contact Dr. Jackie Goodway at 1-(614) 292-8393 or email goodway-shiebler.1@osu.edu.

I have read (or someone has read to me) this form and I am aware that I am being asked to provide permission for my child to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to permit my child to participate in this study.

Signing the parental permission form I am not giving up any legal rights by signing this form. I will be given a copy of this form**.**

Printed name of subject		
Printed name of person authorized to provide permission for subject		**Signature of person authorized to provide permission for subject**
Relationship to the subject		**Date and time**

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent		**Signature of person obtaining consent**
		Date and time

APPENDIX C

STUDENT ASSENT SCRIPT

Hello. My name is Jessica Stevens. I am working with Dr. Jackie Goodway who is a teacher in physical education at The Ohio State University who works with your physical education teacher. You will be seeing us at your school and we are going to send a letter home to your parents to ask whether you can help us with our study.

We are interested in comparing physical activity levels in two different units of instruction in your physical education class. We will look at how much physical activity you get during a hip-hop dance unit and a floor hockey unit. During the floor hockey unit and a hip-hop dance unit we will ask you to wear an accelerometer around your waist during physical education. These are just small palm size clips that you put on your hip like the pedometers you use in physical education. Look at me, I am wearing one right now (researcher points to accelerometer on her hip).

We will also look at your social support for physical activity, expected outcomes for each unit, and your perceptions of athletic competence. These measures will be taken at the start and ending of each unit by answering some questions on a survey.

In addition, I will be videotaping your first and last lessons of the dance and the floor hockey unit. We are asking you to take this letter home to your parents or guardians. The letter explains the study to them. If they agree to you participating they will check yes and sign the form. If they do not agree to you participating they will check no. Please return the consent form to me at school. I will come to your classroom to collect them. We will also be measuring your weight and height privately one student at a time. No one will know this information since this data will be taken one student at a time.

If your parents allow you to participate in the study, I will then ask you if you would like to be in the study. At anytime you can decide to drop out of the study. We hope you can help us with this study because we think that what we learn will help your physical education teacher plan activities for you that promote physical activity. Does any one have any questions? (Jessica responds to questions)

The assent script for children to participate is as follows:

Hello, my name is Jessica Stevens. Remember that I came and talked to your physical education class. Dr. Goodway and I are interested in comparing physical activity levels in two different units of instruction in your physical education class. We will look at how much physical activity you get during a hip-hop dance unit and a floor hockey unit. During the floor hockey unit and a hip-hop dance unit we will ask you to wear an accelerometer around your waist during physical education. These are just small palm size clips that you put on your hip like the pedometers you use in physical education. Look at me, I am wearing one right now (researcher points to accelerometer on her hip).

We will also look at your social support for physical activity, expected outcomes for each unit, and your perceptions of athletic competence. These measures will be taken at the start and ending of each unit by answering some questions on a survey.

In addition, I will be videotaping your first and last lessons of the dance and the floor hockey unit to see what you have learned from the unit. We will also be measuring your weight and height privately one student at a time. No one will know this information since this data will be taken one student at a time. Are you interested in helping us with this study? Would you like to participate in this study?

If the child says yes they will be assigned an ID number and entered into the study. If the child says no they will be removed from the study. As the children are under the age of 14 years verbal assent will be recorded on the parent consent form indicating the date assent was secured and by whom.

APPENDIX D

DANCE SELF-EFFICACY

Class _____ Name _____

Self-Efficacy Scale for Hip-Hop Dance

Please read each question and complete this hip-hop scale. Please answer the questions ranging from a 1 through 6. Please circle only one box.

Experience scale

How much experience do you have in hip-hop dance?

No Experience	Watched it but never done it	A little Experience	Some Experience	Strong Experience	Extensive Experience
1	2	3	4	5	6

Self-efficacy scale

1. I am confident I can hip-hop dance very well.

Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
1	2	3	4	5	6

2. I am confident I can learn new hip-hop dance steps.

Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
1	2	3	4	5	6

3. I am confident I can hip-hop dance on the beat of music.

Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
1	2	3	4	5	6

4. I am confident I can demonstrate hip-hop dance steps in class.

Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
1	2	3	4	5	6

5. I am confident I can hip-hop dance well with others in a group routine.

Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree
1	2	3	4	5	6

APPENDIX E

FLOOR HOCKEY SELF-EFFICACY

Class _____ Name _____

Self-Efficacy Scale for Floor Hockey

Please read each question and complete this hockey/ floor hockey scale. Please answer the questions ranging from a 1 through 6. Please circle only one box.

Experience scale

How much experience do you have playing hockey/ floor hockey?

No Experience 1	Watched i but never done it 2	A little Experienc 3	Some Experienc 4	Strong Experience 5	Extensive Experience 6

Self-efficacy scale

1. I am confident I can play floor hockey very well.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

2. I am confident I can learn new floor hockey skills.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

3. I am confident I can play positioning in floor hockey game.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

4. I am confident I can demonstrate floor hockey skills in class.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

5. I am confident I can play floor hockey well with others in a group.

Strongly Disagree 1	Disagree 2	Mostly Disagree 3	Mostly Agree 4	Agree 5	Strongly Agree 6

APPENDIX F

DANCE SOCIAL SITUATIONS

Name _____ Class _____

Social Support Scale

Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may night apply to you, but please read and give an answer to every question.

Under friends, rate how often your friends or acquaintances have said or done what is described during the last three months.

Please write one number from the following rating scale in each space.

none 1	rarely 2	a few times 3	often 4	very often 5	does not apply

---

During the past three months, my friends:	Friends
11. Danced with me	11. _____
12. Offered to dance with me	12. _____
13. Gave me helpful reminders to dance ("are you going to dance tonight")	13. _____
14. Gave me encouragement to practice my dance routine	14. _____
15. Changed their schedule so we could dance	15. _____
16. Discussed dance with me	16. _____
17. Complained about the time I spend dancing	17. _____
18. Criticized me or made fun of me for dancing	18. _____
19. Gave me rewards for dancing (brought me something or gave me something I like)	19. _____
20. Planned for dance outings	20. _____
21. Helped plan activities around dancing	21. _____
22. Asked me for ideas on how they can dance more	22. _____
23. Talked about how much they liked to dance	23. _____

APPENDIX G

ATHLETIC SOCIAL SITUATIONS

Name _____ Class _____

Social Support Scale

Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may night apply to you, but please read and give an answer to every question.

Under friends, rate how often your friends or acquaintances have said or done what is described during the last three months.

Please write one number from the following rating scale in each space.

none 1	rarely 2	a few times 3	often 4	very often 5	does not apply

---

During the past three months, my friends:

	Friends
11. Played sports with me	11. _____
12. Offered to play sports with me	12. _____
13. Gave me helpful reminders to play sports ("are you going to play a sport tonight")	13. _____
14. Gave me encouragement to stick with a sports exercise routine	14. _____
15. Changed their schedule so we could play a sport	15. _____
16. Discussed sports with me	16. _____
17. Complained about the time I spend playing sports	17. _____
18. Criticized me or made fun of me for playing a sport	18. _____
19. Gave me rewards for participating in a sport (brought me something or gave me something I like)	19. _____
20. Planned for a sporting outing	20. _____
21. Helped plan activities around sports	21. _____
22. Asked me for ideas on how they can play more sports	22. _____
23. Talked about how much they liked to play sports	23. _____

APPENDIX H

DANCE OUTCOME EXPECTANCY VALUE

Reasons to Dance

Never Happens **1**	Rarely Happens **2**	Occasionally Happens **3**	Often Happens **4**	Usually Happens **5**	Always Happens **6**

I think dance will,

1. relieve my stress 1 2 3 4 5 6

Stress reduction is important to me.
Never Rarely Occasionally Often Usually Always

2. make me more relaxed 1 2 3 4 5 6

I like to stay relaxed.
Never Rarely Occasionally Often Usually Always

3. get rid of my frustrations. 1 2 3 4 5 6

It feels good to release my frustrations.
Never Rarely Occasionally Often Usually Always

4. make me happy. 1 2 3 4 5 6

Staying happy is very important to me.
Never Rarely Occasionally Often Usually Always

5. get me to calm down. 1 2 3 4 5 6

When I feel out of control I calming myself is helpful.
Never Rarely Occasionally Often Usually Always

11. provide me an opportunity to demonstrate my feelings. 1 2 3 4 5 6

Having an opportunity to express my feelings for me is a valuable experience.
Never Rarely Occasionally Often Usually Always

12. provide me an opportunity to convey a sensation to others 1 2 3 4 5 6

To convey a strong sensation to people around me is a thrill.
Never Rarely Occasionally Often Usually Always

Never Happens **1**	Rarely Happens **2**	Occasionally Happens **3**	Often Happens **4**	Usually Happens **5**	Always Happens **6**

I think dance will,

13. provide me an opportunity to demonstrate my creativity. 1 2 3 4 5 6

I like to demonstrate my creative nature.

Never Rarely Occasionally Often Usually Always

14. give me an opportunity to use body language. 1 2 3 4 5 6

I enjoy expressing myself through the use of body language.

Never Rarely Occasionally Often Usually Always

15. give me an opportunity to show my emotions. 1 2 3 4 5 6

It is important for me to be able to show the emotions I experience.

Never Rarely Occasionally Often Usually Always

16. help me to nurture the development of precise movement. 1 2 3 4 5 6

I enjoy developing my ability to create precise movement.

Never Rarely Occasionally Often Usually Always

17. give me opportunity to experience precise movement. 1 2 3 4 5 6

Experiencing precise movement is important to me.

Never Rarely Occasionally Often Usually Always

18. help me attain physical mastery without thought. 1 2 3 4 5 6

It feels good to master physical movement without having to think.

Never Rarely Occasionally Often Usually Always

Never Happens **1**	Rarely Happens **2**	Occasionally Happens **3**	Often Happens **4**	Usually Happens **5**	Always Happens **6**

I think dance will,

19. help me to explore the purity of movement. 1 2 3 4 5 6

Experiencing the purity of motion is enjoyable.
Never Rarely Occasionally Often Usually Always

20. help me to feel exhilarated. 1 2 3 4 5 6

I like to experience physical exhilaration.
Never Rarely Occasionally Often Usually Always

31. help me to be with my friends. 1 2 3 4 5 6

I enjoy spending time with my friends.
Never Rarely Occasionally Often Usually Always

32. allow me to stay connected with the lives of my friends. 1 2 3 4 5 6

Being a part of my friends' lives is important to me.
Never Rarely Occasionally Often Usually Always

33. allow me to become closer to my friends. 1 2 3 4 5 6

Remaining close with my friends is important.
Never Rarely Occasionally Often Usually Always

34. allow me to share experiences with my friends. 1 2 3 4 5 6

I value sharing moments with my friends.
Never Rarely Occasionally Often Usually Always

35. give me the opportunity to develop a bond with my friends. 1 2 3 4 5 6

The bonds of friendship are meaningful to me.
Never Rarely Occasionally Often Usually Always

APPENDIX I

ATHLETIC OUTCOME EXPECTANCY VALUE

Reasons to Play Sports

Never Happens	Rarely Happens	Occasionally Happens	Often Happens	Usually Happens	Always Happens
1	**2**	**3**	**4**	**5**	**6**

I think sports will,

1. relieve my stress 1 2 3 4 5 6

Stress reduction is important to me.
Never Rarely Occasionally Often Usually Always

2. make me more relaxed 1 2 3 4 5 6

I like to stay relaxed.
Never Rarely Occasionally Often Usually Always

3. get rid of my frustrations. 1 2 3 4 5 6

It feels good to release my frustrations.
Never Rarely Occasionally Often Usually Always

4. make me happy. 1 2 3 4 5 6

Staying happy is very important to me.
Never Rarely Occasionally Often Usually Always

5. get me to calm down. 1 2 3 4 5 6

When I feel out of control and calming myself is helpful.
Never Rarely Occasionally Often Usually Always

11. provide me an opportunity to demonstrate my feelings. 1 2 3 4 5 6

Having an opportunity to express my feelings for me is a valuable experience.
Never Rarely Occasionally Often Usually Always

12. provide me an opportunity to convey a sensation to others 1 2 3 4 5 6

To convey a strong sensation to people around me is a thrill.
Never Rarely Occasionally Often Usually Always

Never Happens 1	Rarely Happens 2	Occasionally Happens 3	Often Happens 4	Usually Happens 5	Always Happens 6

I think sports will,

13. provide me an opportunity to demonstrate my creativity. 1 2 3 4 5 6

I like to demonstrate my creative nature.
Never Rarely Occasionally Often Usually Always

14. give me an opportunity to use body language. 1 2 3 4 5 6

I enjoy expressing myself through the use of body language.
Never Rarely Occasionally Often Usually Always

15. give me an opportunity to show my emotions. 1 2 3 4 5 6

It is important for me to be able to show the emotions I experience.
Never Rarely Occasionally Often Usually Always

16. help me to nurture the development of precise movement. 1 2 3 4 5 6

I enjoy developing my ability to create precise movement.
Never Rarely Occasionally Often Usually Always

17. give me opportunity to experience precise movement. 1 2 3 4 5 6

Experiencing precise movement is important to me.
Never Rarely Occasionally Often Usually Always

18. help me attain physical mastery without thought. 1 2 3 4 5 6

It feels good to master physical movement without having to think.
Never Rarely Occasionally Often Usually Always

Never Happens 1	Rarely Happens 2	Occasionally Happens 3	Often Happens 4	Usually Happens 5	Always Happens 6

I think sports will,

19. help me to explore the purity of movement. 1 2 3 4 5 6

Experiencing the purity of motion is enjoyable.
Never Rarely Occasionally Often Usually Always

20. help me to feel exhilarated. 1 2 3 4 5 6

I like to experience physical exhilaration.
Never Rarely Occasionally Often Usually Always

31. help me to be with my friends. 1 2 3 4 5 6

I enjoy spending time with my friends.
Never Rarely Occasionally Often Usually Always

32. allow me to stay connected with the lives of my friends. 1 2 3 4 5 6

Being a part of my friends' lives is important to me.
Never Rarely Occasionally Often Usually Always

33. allow me to become closer to my friends. 1 2 3 4 5 6

Remaining close with my friends is important.
Never Rarely Occasionally Often Usually Always

34. allow me to share experiences with my friends. 1 2 3 4 5 6

I value sharing moments with my friends.
Never Rarely Occasionally Often Usually Always

35. give me the opportunity to develop a bond with my friends. 1 2 3 4 5 6

The bonds of friendship are meaningful to me.
Never Rarely Occasionally Often Usually Always

APPENDIX J

DANCE MOTOR COMPETENCE RUBRIC

Hip-Hop Dance Rubric "Walk it Out"

Name/ ID _____

Skills to evaluate for dance

2. First 8 counts
    a. Walk forward for 4 counts moving knees
    b. Walk forward for 4 counts use arms and knees
    c. Turn on count 8

_____ SCORE one or zero

3. Second 8 counts
    a. Walk forward for 4 counts moving knees
    b. Walk forward for 4 counts use arms and knees

_____ SCORE one or zero

4. Third 8 counts
    a. Slide for 2 counts
    b. Tap forward & back for 2 counts
    c. Tap once forward & back
    d. Tap out to side and back by foot

_____ SCORE one or zero

5. Fourth 12 counts
    a. Slide 2 counts
    b. Move arms for 4 counts
    c. Slide 2 counts
    d. Move arms for 4 counts

_____ SCORE one or zero

Total _____/4

APPENDIX K

FLOOR HOCKEY MOTOR COMPETENCE RUBRIC

Sports Rubric (Floor Hockey)

Name/ID _____

Skills to evaluate for floor hockey

2. Dribble
    a. Dominate hand on middle of stick
    b. Non-dominate hand on top of stick
    c. Puck stays in front of student
    d. Student dribbles three consecutive times

_____ SCORE one or zero

3. Trap
    a. Dominate hand on middle of stick
    b. Non-dominate hand on top of stick
    c. Student stops puck before passing
    d. Student puck is under control

_____ SCORE one or zero

4. Pass
    a. Dominate hand on middle of stick
    b. Non-dominate hand on top of stick
    c. Puck is on the heal of the stick
    d. Puck is at minimum parallel or behind the body when passing
    e. Student passes puck and points to where they pass the puck with stick
    f. Student head up
    g. Student looks to passer

_____ SCORE one or zero

5. Shot
    a. Dominate hand on middle of stick
    b. Non-dominate hand on top of stick
    c. Puck is at minimum parallel or behind the body when shooting
    d. Student shoots with puck on the heal of the stick
    e. Stick stays below the knees
    f. Student head up
    g. Student points to net with stick after shot

_____ SCORE one or zero

Total _____/4

APPENDIX L

DANCE BLOCK PLANS

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Warm-up- Simpson Tag Lesson- Students develop 8 counts of dance Practice- Practice walk it out	Warm-up- Jump Rope Lesson- Students continue to develop 8 counts of dance & watch video Practice- Movement across the floor	Warm-up- Basketball Lesson- Students continue to develop 8 counts of dance & watch movies Practice- Practice walk it out	Warm-up- Simpson Tag Lesson- Students do cupid shuffle, superman, cha-cha slide Practice- Continuous cha-cha slide	Warm-up- Continuous jump Lesson- Dancing with new remix music with all dances Practice- Practice dance free style, teacher played music
Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
Warm-up- Simpson Tag Lesson- Students practice choreography Practice- Practice Spiderman dance	Warm-up- Jump rope Lesson- Discuss placement to enter stage, discussing performances and what happens during this process Practice- Continue to learn Spiderman and practice moves	Warm-up- PACER run & Jump rope Lesson- Spiderman and Superman working together peer teaching Practice- Practice dance with all songs 3X's	Warm-up- Continuous jump Lesson- Review performance and the process- pick a toy and move across space acting like toy Practice- Walk across floor different movements teach calls out- practice dance 1X	Warm-up- Simpson Tag Lesson- Students practice placement for end of dance Practice- Practice final dance 3X's
Lesson 11				
Warm-up- Shooting basketballs & jump rope Lesson- Review Dance Practice- Final performance on stage				

APPENDIX M

FLOOR HOCKEY BLOCK PLANS

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Warm-up- PACER & jump rope Lesson- Dribble and placement of hands on stick Practice- Dribble around gymnasium	Warm-up- Jump rope & jog Lesson- Review how to hold stick- keep below waist- teach passing- practice partner passing Practice- Passing in group 4V0 then practice with defender 4V1	Warm-up- Jump rope & jog Lesson- Review how to hold stick and passing Practice- 4V4 game	Warm-up- Simpson Tag Lesson- Students learn positioning (wing, center, defense) Practice- Game 3V3 and 4V4	Warm-up- Jump rope jog Lesson- Practice dribbling through cones- learn three shots (snap, wrist, & slap) Practice- Game
Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
Warm-up- Simpson Tag Lesson- Review positioning and shots, teach trapping & use of forehand and backhand Practice- Game	Warm-up- Jump rope and continuous jump as class Lesson- Discuss offense and defense positioning Practice- Game	Warm-up- Simpson tag Lesson- Discuss teamwork, rules, and review trapping, shooting, & passing Practice- Game	Warm-up- Jog or walk & run Lesson- Review rules, positioning, and penalties Practice- Game	Warm-up- Polymerics & practice dribbling through cones Lesson- Review teamwork and game play Practice- Game
Lesson 11				
Warm-up- Simpson tag Lesson- Practice dribbling through cones Practice- Game				