

**The Effects of Trained Peer Tutors on Academic Learning Time-Physical Education
of Persons with Visual Impairments**

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Chapter 1

Introduction

Public Law 94-142, The Education for All Handicapped Children Act of 1975, and all of its' subsequent revisions, provides physical education programs for all persons with disabilities. Included under the provisions of this law are persons who are visually impaired. In this research study, the definition used in the implementation of the Individuals with Disabilities Education Act Amendments of 1997 (PL 105-17) will guide the use of the term visual impairment, including blindness. The researcher will then refer to visual impairments as encompassing the full range of visual disabilities between legal blindness (20/200) and total blindness (Lieberman, Houston-Wilson, & Kozub, 2002).

Many students with visual impairments (VI) who in the past might have enrolled in special schools for persons with VI now attend public schools (Dunn, 1997; Sherrill, 1998). There are several problems that children with VI are facing in the integration process, including the fact that they are given few opportunities to participate, teachers' negative attitudes, and poor teacher knowledge regarding how to include students with VI (Block, 2000). A study done by Lieberman, Houston-Wilson, and Kozub (2002) which examined the perceived barriers of general physical education teachers to including students with VI found that professional preparation, lack of appropriate equipment, programming/curriculum, and time in schedule were the dominate barriers to including students with VI.

Children with VI have the same needs for physical activity and physical education as their sighted peers (Dunn, 1997). In fact, children with VI may need physical

education more so when compared to sighted children. Lack of normal vision may restrict their play to such an extent that they are noticeably delayed in their physical development (Dunn, 1997). In addition, protective parents may reduce a child's natural interest in big muscle movements, which contributes to normal muscular growth and the development of coordination (Dunn, 1997). Persons with VI often demonstrate delays in reaching developmental milestones, particularly in mobility- and locomotion-related behaviors (Sherrill, 1998). Also included are delays in object control and manipulation skills, which can be delayed 3 to 6 months, along with delays in play and social skills (Sherrill, 1998).

All parts of the visual system are important in postural control and motor performance (Sherrill, 1998). Persons with VI display poor posture due to lack of strength in postural muscle (Dunn, 1997) and because of lack of visual examples to imitate peers (Dunn, 1997; Parson, 1986; Wyatt & Ng, 1997). Persons with VI tend to have lower levels of motor performance when compared to sighted classmates (Skaggs & Hopper, 1996). Persons with VI display lower fitness levels due to lack of instruction and practice, inactive lifestyles, and overprotection (Sherrill, 1998). Sherrill (1998) notes concerns for the fitness of persons with disabilities. One concern is poor body alignment, a second concern is that inefficient movement patterns increase energy expenditure, a third concern is that mechanical efficiency is negatively effected by sensory impairments, and finally, coping with architectural barriers requires extra energy.

Physical education of blind students in the past has been neglected (Buell, 1974): The visually impaired generally adopt a sedentary lifestyle (Buell, 1974; Dunn, 1997;

Laughlin, 1975; Stanford, 1975). However, it has also been demonstrated that persons with VI can attain levels of physical fitness comparable to their sighted peers (Blessing, McCrimmon, Stoval, & Williford, 1993; Buell, 1973; Buell, 1974; Sherrill, 1998), and that training can increase aerobic function and decrease skin fold thickness (Shindo, Kumagai, & Tanaka, 1987). Yet, most research on persons with VI demonstrates just the opposite. Buell (1982) states that visually impaired persons need to be more fit than their sighted peers due to increased energy expenditure. Specific findings concerning fitness levels of persons with VI prove how important physical education and physical activity is for this population. Research demonstrates that children with VI tend to have more body fat, less cardiovascular endurance, less muscular endurance, and less muscular strength than their sighted peers (Hopkins, Gaeta, Thomas, & Hill, 1987; Jankowski & Evans, 1981; Lieberman & McHugh, 2001; Shindo, Kumagai, & Tanaka, 1987; Short & Winnick, 1986; Winnick & Short, 1985). Short and Winnick (1986) state that in general, the physical fitness levels of visually impaired adolescents are significantly below those of their sighted peers.

Lack of vigorous exercise predisposes persons with VI to diseases that include obesity, hypertension, diabetes, arteriosclerosis, osteoporosis, increased risk of cardiac arrest, and reduced life expectancy (Stanford, 1975). Blindness is associated with reduced mechanical efficiency, which increases the use of energy during locomotion (Buell, 1974; Stanford, 1975). In addition, increased tension develops when motor activities are performed without visual feedback and this increases the metabolic demands on the circulatory, respiratory, and neuromuscular systems (Buell, 1973).

The research thus far has demonstrated that persons with VI now attend public schools more often than they attend special schools (Dunn, 1997; Sherrill, 1998). With these facts in mind two questions become apparent: First, how can the information we have lead to changes in how we teach students with VI in the physical education environment? Second, how can a general physical education teacher be sure their student(s) with VI are achieving levels of physical fitness and motor development comparable to their sighted peers? One solution is to increase the amount of time a student spends engaged in motor appropriate behaviors.

Student engagement in subject matter, [at an appropriate level], is a powerful predictor of achievement (Siedentop, Tousignant, & Parker, 1982). The technique of monitoring the amount of time a student spends in Academic Learning Time-Physical Education (ALT-PE) is a method of systematic observation used to measure student achievement in the physical education classroom. Most of the research on process indicators in relation to student learning in physical education has focused on ALT-PE (Siedentop et al., 1982). ALT-PE is that portion of engaged time when the student is involved with the materials that are appropriate to his or her abilities, resulting in high success and low error rates (Parker, 1989). "The purpose of the ALT-PE instrument is to measure the portion of time in a physical education lesson that a student is involved in motor activity at an appropriate success rate." (Parker, 1989, p. 195) Success is dependent on two variables. First, the student must be motor engaged. Second, the engagement must be motor appropriate.

Parker (1989) notes that the average percentage of ALT-PE for public school classes appears to range between 15 and 25 percent. A study done by Temple (1994)

revealed that a significant difference existed in the observed ALT-PE between children with mild intellectual disabilities (MID) and their non-disabled peers. She noted that students with MID participated in less appropriate motor activity, had fewer opportunities to respond, engaged in more inappropriate motor activities, and were off-task more than students without disabilities. A study conducted by Knowles, Aufderheide, & Mckenzie (1982) found that students without disabilities were engaged in a higher percentage of ALT-PE compared to students with disabilities who were included in the class and that use of individualized instruction increased ALT-PE of the students with disabilities. Temple & Walkley (1999) found similar results in a study that involved student with MID. They found both male and female students with MID were significantly less engaged with the content than their non-disabled peers were for numerous subcategories of ALT-PE (motor engagement and motor appropriateness). They noted that students with MID were engaged in 40 percent less motor appropriate activity than non-disabled peers and students with MID spent an average of only 15 percent of their lesson successfully engaged with the curriculum.

As noted by Knowles, Aufderheide, & Mckenzie (1982) classes that utilized individual instruction had higher percentages of ALT-PE than classes that did not. This lends itself to the notion that the use of peer tutors might increase the ALT-PE of persons with disabilities including visual impairments. The use of peer tutors is a successful and inexpensive means to provide students with disabilities the extra help needed to succeed in the general physical education class (Houston-Wilson, Lieberman, Horton, & Kasser, 1997). A study conducted by Lieberman, Newcomer,

McCubbin, & Dalrymple (1997) found that peer tutoring increased the level of motor appropriate behavior and increased the stability of motor appropriate behavior of students with mental retardation integrated into a general physical education setting. In a study that examined the influence of support personnel on students with disabilities, Murata & Jansma (1997) showed the effect of physical educator combined with a peer tutor to positively influence the amount of ALT-PE. Results of this research demonstrated that, when supported, students with disabilities could participate at a relatively equal level when compared to students without disabilities. Data collected by Webster (1987) revealed higher motor appropriate behavior percentages for the intervention phase than the baseline phase for all students with mental retardation being assisted by peer tutors. She adds that the effect of peer tutors is strengthened by the decline in ALT-PE data for the tutor training and reversal phases. In fact, all students involved in the study had lower scores in ALT-PE when left without peer tutors (Webster, 1987). Both Lieberman et al. (1997) and Webster (1987) concluded that increases in motor appropriate behavior and the amount of time students with disabilities spend in motor activity, respectively, is a direct result of involvement with a peer tutor. In a study of three least restrictive environments, DePaepe (1985) found that peer tutors significantly increased the amount of time students with moderate mental retardation practiced content motor behaviors, which established the peer tutor classroom setting as the least restrictive environment for enhancing motor performance.

Not only do peer tutors aid in increasing ALT-PE; studies have also demonstrated that peer tutors can increase other aspects of physical education for persons with

disabilities as well. Students with severe multiple disabilities, with the assistance of partners as young as 5th grade, who participated in a 12-week Special Olympic Motor Activities Training Program showed significant improvement in motor skills development and adaptive behaviors (Block, Conatser, Montgomery, Flynn, Munson, & Dease, 2001). Lieberman, Dunn, van der Mars, & McCubbin (2000) concluded that trained peer tutors were effective in assisting with the improvement of physical activity levels of students with deafness. Houston-Wilson, Dunn, van der Mars, & McCubbin (1997) revealed that trained peer tutors were effective in assisting students with disabilities to reach higher levels of motor performance. A study involving teaching age-appropriate playground recreation skills to children with mental retardation by non-disabled peers showed substantial improvement in the percentage of age-appropriate playground behavior of the students with mental retardation (Donder & Nietupski, 1981).

Research has demonstrated that peer tutors have a positive effect on the physical outcomes of persons with disabilities. Research has proven that peer tutors are an effective and cost efficient means to improve various aspects of physical performance. To date no research has been conducted to specifically show the effect of peer tutors on the ALT-PE or any other aspect of physical education for person with visual impairments.

Statement of Problem

Persons with visual impairments are behind their same-age non-disabled peers in both physical fitness and motor performance. Persons with disabilities are engaged in less ALT-PE compared to their same-aged non-disabled peers. Since it is imperative

that one must be engaged in physical activity to reap the benefits, it is time that all students are afforded equal opportunity in the physical education setting. All students, regardless of ability, have the right to physical education and physical activity. The research presented above indicates that the population of students with visual impairments is not being served.

Statement of Purpose

The purpose of this study is to determine the effect that same-age peer tutors have on the Academic Learning Time-Physical Education of persons with visual impairments.

Statement of Hypothesis

The intervention of same-age peer tutors will increase the amount of Academic Learning Time-Physical Education of persons with visual impairments.

Operational Definitions

Academic Learning Time-Physical Education- “That portion of engaged time when the student [is] involved with materials that [are] appropriate to his or her abilities, resulting in high success and low error rates.” (Parker, 1989, p. 195)

Motor Appropriate (MA)- “The student is engaged in a subject matter motor activity in such a way as to produce a high degree of success.” (Parker, 1989, p. 198)

Motor Inappropriate (MI)- “The student is engaged in a subject matter-oriented activity, but the activity-task is either too difficult for the individual’s capabilities or so easy that practicing it could not contribute to lesson goals.” (Parker, 1989, p. 198)

Motor Engaged (ME)- “Motor involvement with subject matter-oriented motor activities related to the goals of the setting.” (Parker, 1989, p. 198)

Not Motor Engaged (NE)- “Any student involvement other than motor involvement with subject matter-oriented motor activities.” (Parker, 1989, p. 198)

Off-Task (OfT)- “The student is either not engaged in an activity he or she should be engaged in or is engaged in an activity other than the one he or she should be engaged in.” (Parker, 1989, p. 198)

On-Task (OnT)- “The student is appropriately engaged in carrying out an assigned non-subject-matter task (e.g., management task, transition task, warm-up task).” (Parker, 1989, p. 198)

Peer Tutor (PT) - A student helping another student (Block, 2000).

Visual Impairment (VI)- “Visual impairments, including blindness, means an impairment in vision that, even when corrected, adversely affects a child’s educational performance. The term includes both partial sight and blindness.” (PL 105-17, Individuals with Disabilities Education Act, 1997)

Waiting (W)- “The student has completed a task and is waiting for the next instruction or opportunity to respond.” (Parker, 1989, p. 198)

Assumptions

The following assumptions will be made concerning the study:

- 1) Typically developing same-age peer tutors will be able to implement peer-training strategies.
- 2) The video camera will not affect the behavior or performance of the students.
- 3) The peers are representatives of other typical children in their age group.
- 4) The peer tutors will have the opportunity to practice peer-tutoring strategies.
- 5) All participants have signed letters of informed consent.

6) The researcher is knowledgeable in the implementation of the peer tutor training strategies.

7) The observation will be representative of other individuals with visual impairments.

Limitations

1) The children's behavior cannot be controlled.

2) The sample size is small.

3) Prior movement experiences cannot be controlled.

4) Prior peer interactions cannot be controlled.

5) The sample will be from very few schools in Western New York.

6) Motivation of the subjects cannot be controlled.

7) Participation in extra-curricular activities cannot be controlled.

Delimitations

1) Participants will be limited to persons with visual impairments.

2) Participants will be school-aged children.

3) The study concentrates on Academic Learning Time-Physical Education.

4) Peer tutors will be trained using an established peer tutor training program.

Chapter 2

Review of Literature

The purpose of this chapter is to review the literature on the effects that peer tutors have on persons with disabilities and Academic Learning Time-Physical Education (ALT-PE). Additionally, research related to the physical implications of persons with visual impairments (VI) will be discussed.

Physical Implications of Persons with Visual Impairments

Lieberman and McHugh (2001) conducted a study on the health-related fitness of children who are visually impaired. The study tested 46 children, ages 9-19, with VI. The participants were 26 girls and 20 boys. The Fitnessgram health-related fitness test was used as the testing instrument. The test assessed four areas of fitness. The areas covered were cardiovascular endurance, muscular strength and endurance, flexibility, and body composition. Fitnessgram is a criterion referenced test, so participants were expected to meet designated standards of performance to pass. Data was analyzed by comparing passing percentages between identified groups. Results demonstrated that persons with VI are less fit compared to their sighted peers. Specifically, less than 20% of the participants with VI passed at least four items on the Fitnessgram compared to 48-70% of the sighted children.

Skaggs and Hopper (1996) provided a comprehensive review of the psychomotor behaviors of persons with VI. The review included results in two categories that are important to the current review of literature. The two categories were physical fitness and motor performance. Almost all the studies reviewed on physical fitness concluded that children with VI had significantly lower scores in fitness than their

sighted peers. The review suggested lower performance of persons with VI in cardiovascular endurance, muscular endurance, flexibility, and balance when compared to sighted peers.

Review of the studies that dealt with motor performance found that persons with VI were significantly lower in motor performance compared to their sighted peers.

Further, the review suggested that boys with VI had better scores than girls with VI in studies of motor performance.

Wyatt and Ng (1997) conducted a study that measured the static strength of the hip and knee extensors of children who were born with severe VI and compared the findings to sighted children. A total of 32 participants ages 6-12 were tested. Ten participants were born blind, eight were born with low vision, and 14 were born with normal sight.

An electronic strain gauge with a digital-force display unit was used to measure the strength of the children's hip and knee extensors. The dominant leg was used for the measurement. In all the tests, the participants who were blind had the lowest strength followed by participants with low vision and then participants with normal vision. Before correction for lean body weight, the blind participants were weaker than those participants with normal vision.

Ribadi, Rider and Toole (1987) conducted a study that compared static and dynamic balance in sighted, sighted blindfolded, and student who were congenitally blind. There was 51 participants ages 14.1 to 17.4. The sighted participants (34) were divided into two groups. One group was the sighted group (17) and the other group was the sighted blindfolded group (17). The third group was the congenitally

blind group (17). All participants were tested for static balance using the Stork Stand and dynamic balance using the stabilometer. It was concluded that the sighted participants did significantly better than the blind participants on the static and dynamic balance tasks.

Kobberling, Jankowski, and Leger (1989) conducted a study on energy cost of locomotion in blind adolescents. Thirty legally blind adolescents (20 male, 10 female), ages 12-16, and 30 sighted adolescents participated in the study. Submaximal and maximal rates of oxygen consumption were measured for each of the participants. The study concluded that the average energy cost of walking was 25.4% higher for persons with VI compared to sighted adolescents. The average cost of running was 10.8% higher for persons with VI compared to sighted adolescents.

Blessing, McCrimmon, Stovall, and Williford (1993) conducted a study of the effects of a 16-week exercise program of 30 visually impaired students. The participants were 19 boys and 11 girls ages 8-18. The training program targeted cardiovascular fitness and body composition. Comparisons were made between the training program for the students with VI and a traditional physical education class for a group of sighted students from a local public school. Participants from both groups were assessed before and after the training period. The participants performed a submaximal test on the cycle ergometer to 85 percent of their predicted maximum heart rate and each subject had their skin fold measure taken to determine percent change in body fat following training. Statistical significance was judged based on a paired t-test comparing the values of the group with VI and the group in regular physical education. Results showed a significant difference in pre-intervention skin

fold measures favoring the physical education group. Post intervention showed that the participants with VI improved cardiovascular fitness and body composition while the physical education group stayed the same.

Peer Tutor Effects on Various Physical Domains for Persons with Disabilities

A study conducted by Block, Conatser, Montgomery, Flynn, Munson, and Dease (2001) which wanted to determine the effect of 5th and 6th grade students without mental retardation serving as peer partners on the motor skill performance and aberrant behaviors of students with severe, multiple disabilities. The ages of the students with disabilities were 7-14. The training protocol used in the study was the *Special Olympics Motor Activities Training Program (MATP)*. Twenty-six students (13 boys and 13 girls) served as participants in the study. The students were educated in a self-contained school for students with severe, multiple disabilities. The participants had either severe autism or severe mental retardation to such an extent that they required support. Twenty-five partners (15 girls and 10 boys) from 5th and 6th grade were recruited to serve as partners. Each partner without a disability was assigned a particular child with a disability. Partners were trained for 4 hours (2 hours in each of 2 days). Partners worked with their students for 1 hour every Thursday for 12 weeks. Partners were to assist their students in motor skills training that included aquatics, bowling, cycling, throwing, kicking, baseball striking, golf, and manipulation of computer switches. Motor skills were adapted when needed. Motor skills were taught by partners and then assessed by staff members each week. Each student with a disability worked on multiple skills according to their IEP. Training was designed to help students become more independent. Comparisons

were made between relative levels of independence of students successfully completing assigned activities in the beginning of the program and the end of the program. The mean independence score from the first week was 58.73%. The mean independence score for the last week rose to 83.81%. It was concluded that the students were better able to perform individually targeted motor activities with more independence because of the assistance of student partners. It was also concluded that the students in this study improved their overall adaptive behaviors during the study.

Lieberman, Dunn, van der Mars, and McCubbin (2000) conducted a study to analyze the effect of trained peer tutors on the physical activity levels of deaf students in an inclusive elementary physical education class. Participants were eight deaf students (4 boys and 4 girls) and eight same-gendered trained hearing peer tutors in grades 4-6. The dependent variable was the percentage of intervals spent in moderate or vigorous physical activity (MVPA). The information was collected with the System for Observing Fitness Instruction Time (SOFIT) observation instrument. Peer tutors were trained to use instructional techniques. These techniques included cueing, modeling, physical assistance, and feedback techniques by way of sign language. Peer tutors completed four to five 30-minute training sessions. A single subject delayed multiple baseline across participants research design was employed. The research study included 3-4 sessions of baseline, 11-14 sessions of intervention, and 1-3 sessions of maintenance. The researchers analyzed the data visually in order to inspect any variability and trends in the data patterns. The research revealed that after

the introduction of peer tutors, deaf students increased their MVPA from 22% to 41.5%, and peer tutors increased their MVPA from 19% to 37.9%.

Houston-Wilson, Dunn, van der Mars and McCubbin (1997) researched the effect of untrained and trained peer tutors on the motor performance of students with developmental disabilities in an integrated physical education setting. Participants included six students (5 boys and 1 girl) with developmental cognitive and motor delays. Participants ranged in age from 9 to 11 years. All were classified as having mental retardation. Six peers (2 boys and 4 girls) were chosen by their physical education teacher to serve as peer tutors. The peer tutors were the same age as the participants. Peer tutors were randomly assigned to participants. Each peer tutor was trained individually over two 30-minute sessions. The dependent variable in the study was the discrete motor skills performed during classes over the course of the study. The researchers analyzed the skills of horizontal jump, catch, overhand throw, forehand strike, and sidearm strike. The skills coincided with the activities taught in the participants' physical education classes. Each motor skill was analyzed for the presence/absence of five critical elements that would yield a mature pattern. The critical elements formed the basis of determining the percentage of motor appropriateness of each discrete motor skill response. The study employed a delayed multiple baseline across subjects design. Each participant received instruction in separate classes. The first three participants (protocol 1) received three conditions. Condition A, baseline; Condition B, intervention by untrained peer tutors; and Condition C, intervention by trained peer tutors. The remaining three participants (protocol 2) participated in two conditions, Condition A and Condition C. Analysis

of data included visual inspection to interpret data paths of mean percentages of motor appropriateness for each session, across the experimental design. Results from protocol 1 (conditions A, B, and C) revealed that trained peer tutors were effective at assisting participants to improve their motor performance while untrained peer tutors were not. Results for protocol 2 (condition A and C) reinforced what was found in protocol 1. Trained peer tutors were effective at assisting participants to improve their motor performance in integrated physical education classes.

Academic Learning Time-Physical Education for Persons with Disabilities

Temple and Walkley (1999) conducted a research study to describe the engagement of students with mild intellectual disabilities (MID) and their non-disabled peers (NDP) in the general physical education setting. Data on student behavior was collected using the Academic Learning Time-Physical Education (ALT-PE) systematic observation instrument. The instrument measures how students spend their time in physical education class, specifically measuring the amount of time students spend successfully engaged in motor activity related to the lesson objective. Participants in the study were 24 students with MID. The participants were both boys and girls in both elementary and secondary school. The NDP comparison group consisted of 48 students. Two NDP were randomly assigned to one of the students with MID. Each of the 24 students with MID was observed 5 times at their usual time and location. Data was analyzed using a factorial multivariate analysis of variance. Results revealed that students with MID were significantly less engaged with the content than NDP for each subsequent subcategory of ALT-PE (engaged with the content, class time motor engaged, engaged at a motor appropriate level).

Students with MID were engaged in 40% less motor appropriate activity than NDP. This shows that students with MID were not provided with curriculum opportunities suited to their intellectual and motor abilities. Students with MID are spending on average only 15% of their lesson successfully engaged with the curriculum.

A pilot study conducted by Temple (1994) on the effectiveness of integration in physical education of students with MID. This study used the ALT-PE systematic observation instrument. Eighteen students were used as participants in this study, six students with MID (three males and three females) and twelve of their NDP (six males and six females). All the participants in the study were educated in general physical education classes. There was one student with MID and two NDP (NDP 1 and NDP 2) in each class. Each of the six classes was observed five times. The study compared the amount of time participants spent in ALT-PE. Results of the ANOVA test revealed a significant difference existed in the observed ALT-PE between MID, NDP 1, and NDP 2. The results indicated that the participants with MID engaged in less appropriate motor activity than NDP. Results also showed participants with MID had fewer opportunities to learn in these classes than NDP. Participants with MID experienced more inappropriate motor activity than NDP. Participants with MID were more off-task than NDP. When working individually the difference in ALT-PE became even greater.

Vogler, van der Mars, Cusimano, and Darst (1992) conducted a study that focused on teaching effectiveness with elementary level mainstreamed (integrated) and non-disabled children. Forty students, grades 1 through 6, participated in the study. Participants were evenly distributed among classroom settings, one integrated student

and one NDP per class. ALT-PE systematic observation system was used to analyze teacher effectiveness. Results showed that integrated students were significantly less motor appropriate (ALT-PE) and more off-task than NDP.

A study done by Knowles, Aufderheide, and McKenzie (1982) investigated the difference between ALT-PE of students with a disability and their NDP in an integrated physical-education setting and the difference in ALT-PE between individualized instruction or non-individualized instruction. The amount of ALT-PE of 60 students with a disability (mild mental retardation) and 60 NDP in elementary school physical education classes was used for the comparisons. Participants were selected from the classes of seven teachers classified as individualized instruction users and seven teachers classified as non-users. Results revealed that the students without disabilities were engaged in a higher percentage of ALT-PE compared to students with disabilities, but not at a significant level. Results also showed that the classes that utilized individual instruction had higher percentages of ALT-PE than classes that did not.

Effect of Peer Tutors on Academic Learning Time-Physical Education

Lieberman, Newcomer, McCubbin, and Dalrymple (1997) conducted a study to determine the effect peer tutors have on the time students with disabilities spent appropriately motor engaged in the regular physical education setting. Participants in the study included six students' grades K-2 with various disabilities (children with Down Syndrome, mild autism, behavior disorder, and developmental delays). All peer tutors used in the study were 11 years of age and volunteered to be tutors. Peer tutors were trained to use instructional strategies. Training was taught in one day

over a two and a half hour period. Tutors were matched to one student each and provided one-to-one instruction. The ALT-PE systematic observation system was used in this study. ALT-PE coding of student behavior was on-task, off-task, motor appropriate, motor inappropriate, waiting, or a cognitive task. This study used delayed multiple baseline single-subject across subjects design. Percentages of time involved in motor appropriate behavior between baseline and intervention of the peer tutors was used for the comparison. Visual analysis was used to inspect and interpret ALT-PE data paths across participants and experimental design. Results demonstrated that the use of peer tutors is an effective means of improving ALT-PE. Specifically, peer tutoring increased the mean percentage level of motor appropriate behaviors and increased the stability of motor appropriate behaviors of all the participants involved during integrated physical education activities.

Murata and Jansma (1997) conducted a study that examined the influence of support personnel on the ALT-PE of students with and without disabilities. Types of support personnel included physical educator and teacher assistant, physical educator and peer tutor, and physical educator only. Training of support personnel consisted of two, two-hour training sessions. Training was on key behavior categories of ALT-PE, *Data Based Gymnasium*, the preferred adaptation and modifications of the physical activity units, and the roles and responsibilities of the teacher assistant and peer tutor. After completion of the training session, participants were randomly assigned to targeted students with disabilities for approximately 10 sessions. Participants in the study included three individuals with multiple disabilities and three individuals without disabilities. All participants were from the same high school

physical education class, which consisted of 24 students (including the participants). The students with multiple disabilities were selected to participate in the study because of their disability, so randomness was precluded. The students without disabilities were randomly selected, without teacher knowledge, from the class of 24. All participants were engaged in the same pre-selected activities. Data was analyzed using percentage mean scores of ALT-PE by data phase (baseline, intervention, and best practice) and visual inspection of graphs. Results demonstrated that, when supported, students with disabilities were engaged in relatively equally amounts of ALT-PE when compared to their classmates without disabilities. Percentage mean scores across intervention and best practice phases revealed higher values for the physical educator /peer tutor condition and the physical educator/teacher assistant condition.

Webster (1987) conducted a study that investigated the influences of peer tutors for increasing ALT-PE of students with moderate and severe mental disabilities. A multiple baseline across students and withdraw design was used to analyze the effects of trained and untrained peer tutors on ALT-PE of the participating students. Participants were three students with disabilities and three peer tutors. The ALT-PE systematic observation instrument was used to code motor appropriate behaviors of the participants. Data was then analyzed by visual inspection to interpret any trends in ALT-PE across the experimental design. Results of the study revealed higher motor appropriate behavior percentages (ALT-PE) for the intervention phase than for the baseline phase for all three students.

DePaepe (1985) conducted a study that investigated which of three least restrictive classroom environments would provide the best opportunity for students with mental retardation to practice on-task motor behavior. Thirty students, ages 5 through 12, were randomly assigned to one of three treatment groups, each representing a type of classroom setting. The three groups were a peer tutor group, a self-contained group, and a specific mainstreamed (integrated) group. The first group was the only group that had peer tutors assigned to the students. The third group was broken down into classes that would simulate a natural integrated environment. All participants, including students without disabilities, were required to participate in a sequentially arranged balance (the dependant variable) unit specifically task-analyzed for the experimental population. The ALT-PE of each student was documented to determine which setting yielded the best opportunity for the students' motor development. Dynamic and static balance tests were administered to evaluate the acquisition of balance motor skills. The results of the balance test revealed that the peer tutor group was superior to the self-contained group, and the specific mainstreamed (integrated) group. The peer tutors also significantly increased the amount of time the participants practiced content motor behavior (ALT-PE). It was established that the peer tutor classroom environment was the least restrictive environment for enhancing motor performance.

Summary

In summary, this literature review indicated that persons with visual impairments are often behind their same-aged peers in many aspects of physical development. Results from Lieberman and McHugh (2001) demonstrated that persons with VI are

less fit compared to their sighted peers. Specifically, less than 20% of the participants with VI passed at least four items on the Fitnessgram compared to 48-70% of the sighted children. Almost all the studies reviewed by Skaggs and Hopper (1996) on physical fitness concluded that children with VI had significantly lower scores in fitness than their sighted peers. Persons with visual impairments need a physical education program in which they spend equal amounts of time involved in motor appropriate behaviors as their sighted peers. Persons with visual impairments need to be more fit due to increased energy cost (Buell, 1982). The average energy cost of walking is 25.4% higher for persons with VI compared to sighted peers. The average cost of running was 10.8% higher for persons with VI compared to sighted (Kobberling, Jankowski, and Leger, 1989).

Increases in Academic Learning Time-Physical Education (ALT-PE) often lead to increases in various aspects of physical development. Student engagement in subject matter, [at an appropriate level], is a powerful predictor of achievement (Siedentop, Tousignant, & Parker, 1982). The use of peer tutors can increase the amount of ALT-PE for persons with disabilities (Lieberman, Newcomer, McCubbin, and Dalrymple, 1997; Murata and Jansma, 1997; Webster, 1987; DePaepe, 1985). Increases in the ALT-PE of persons with visual impairments can also be improved with the help of peer tutors. The use of peer tutors is a successful and inexpensive means to provide students with disabilities the extra help needed to succeed in the general physical education class (Houston-Wilson, Lieberman, Horton, & Kasser, 1997).

Chapter Three

Method and Procedures

The purpose of this chapter was to present the methods and procedures that were used to assess the effect of peer tutors on Academic Learning Time-Physical Education (ALT-PE). The following topics are presented: selection of subjects, instruments, apparatus, procedures, experimental design, and analysis of data.

Methods

Participants

Participants in this study includes four students with visual impairments (VI), and at least two same-aged, same-gender peer tutors from their integrated physical education class. For the purpose of this study the students with the VI will be referred to as the “tutees” and their peer tutor will be referred to as “tutors”. The grade ranges are from elementary to high school. The sampling design was purposive, meaning criteria were used to select students who were representative of persons with VI and classmates who might be trained as tutors in integrated physical education setting throughout the country (Lieberman, Dunn, van der Mars, and McCubbin, 2000). Two males and two females participated in this study as the tutees. Participants were selected from a list of campers that attended Camp Abilities, a sports camp for persons with VI, in Brockport, NY. The list was then narrowed down to persons with VI (B2 or higher classification) that reside in the Western New York area. In order to participate in this study, all tutees volunteered, signed an informed consent form (Appendix B), had parent(s) sign an informed consent form, had a physical education teacher who agreed to participate, and had the school district

agree to participate.(Appendix C).

Tutors were selected from the tutees' physical education class. All tutors volunteered, were chosen by their physical education teacher, were chosen by their classroom teacher, signed an informed consent form (Appendix D), and underwent an 1 1/2 to 2 hour training session (Appendix E) which concluded with a test (Appendix F) in which a 90% or better was attained.

Instruments

Instrumentation included a modified version of the ALT-PE coding sheet (Appendix G) from Siedentop, Tousignant, and Parker (1982). The coding sheet was modified to focus on motor appropriate behaviors (ALT-PE). First level categories on the coding sheet include motor engaged (ME) and not motor engaged (NE). Under each first level category are subcategories. Subcategories for the ME main category include a) motor appropriate (MA), b) motor inappropriate (MI), and c) waiting (W). Subcategories for the NE main category include a) on-task (OnT), and b) off-task (OfT). A demographic sheet for each tutee was used to gather information on the tutee, tutors, and teacher (Appendix H).

Apparatus

A Panasonic camera recorder and Sony videotapes was be used to record the behaviors of the participants.

Procedures

After tutees were selected, each was videotaped for 4-5 classes to establish a baseline phase. Once the baseline data demonstrated a steady pattern, the intervention began. The primary investigator and teacher selected the tutors

according to the criteria established prior to the study. Each tutor then received peer tutor training along with the tutee. The training took place in one day and lasted approximately 1 1/2 to 2 hours dependant on time constraints. The peer tutor training program that was established by Lieberman and Houston-Wilson (2002) was used. Training included information about various teaching and feedback techniques. The training enabled tutors to become proficient in the instructional techniques of cueing, modeling, physical assistance, brailing, and feedback. Feedback techniques specifically included positive general feedback, positive specific feedback, and corrective feedback. At the completion of the training program, each tutor was required to pass a test with a score of 90% or better to further participate in the study. The test assessed the knowledge gained during the training program.

After training was complete all participants (tutors and tutees) were videotaped for 10-12 classes, which served as the intervention phase. The physical education teacher and the primary investigator set up a peer tutor schedule. Only one peer tutor was required per class to assist the tutee. Throughout the intervention phase the primary investigator monitored and gave feedback to the tutors. The primary investigator met the tutor prior to each class to give information on various teaching techniques in regard to the days activity. The primary investigator also met the tutor after each class to discuss the day's activity and to answer any questions that may have concerned the tutor or tutee.

Experimental Design

A single subject delayed multiple baseline design across participants was used in this study (Cooper, Heron, and Heward, 1987). This study included 4-5 classes of

baseline and 10-12 classes of intervention. After initial baseline and intervention were recorded, subsequent baselines and intervention were added in a delayed fashion (Cooper et al., 1987). This method was chosen because researchers can analyze the effects of the intervention without removing it. Also, the treatment can be tested on more than one participant.

Analysis of Data

Data on all participants were collected via videotape recording during the entire class period. An analysis of the participants' Academic Learning Time-Physical Education (ALT-PE) was presented as percentages of motor appropriate behaviors for each class. The researcher used the interval recording technique, 6 seconds record and 6 seconds observe, to determine the amount of ALT-PE (Siedentop, Tousignant, and Parker, 1982). Daily percentages were graphed for each participant. Visual analysis was then used to interpret and analyze the data paths for each participant. Visual analysis determined if changes occurred in the data patterns and if the changes correspond to the implementation of the intervention. Changes in the level of ALT-PE and changes in the mean score of ALT-PE across phases were also analyzed. The data was also analyzed for any variability and trends within the phases and overlap between phases. The difference in percentages of ALT-PE within phases was used to determine variability. Percentage of overlap was calculated by counting the number of intervention data points that overlapped with baseline data and dividing that number by the total number of data points in intervention (Lieberman, Dunn, van der Mars, and McCubbin, 2000). Through visual analysis, the effect of peer tutors on ALT-PE for persons with VI in general physical education was determined.

Chapter 4

Results

The purpose of this study was to determine the effects that same-age, trained peer tutors have on the Academic Learning Time-Physical Education (ALT-PE) of students with visual impairments in general physical education. Chapter 4 presents the effects of the intervention of the trained peer tutors on ALT-PE for persons with visual impairments. The following sections are included in this chapter: (a) reliability, (b) data analysis, (c) trained vs. untrained peer tutors, (d) open vs. closed skills, and (e) comparisons of means between participants and classmates.

Reliability

All participants were videotaped to obtain an accurate visual recording of their motor engagement in physical education. Upon completion of each class the video was analyzed to obtain a percent of ALT-PE. The highest value possible to obtain was 100 percent. Upon completion of each phase the subjects' mean percentage of ALT-PE was then determined by averaging all the observation scores.

Interobserver and intraobserver reliability was determined by using the formula $\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100$ (van der Mars, 1989). Interobserver agreement was determined with secondary observer. In this study, a graduate student in adapted physical education was trained in observing and recording the results onto data sheets. One class from baseline and one class from intervention were randomly selected and observed for each participant for the reliability check. An interobserver reliability score of 89.6% was attained. The same randomized method was used for intraobserver reliability. An intraobserver reliability score of 95.8% was attained.

Data Analysis

This study used a delayed multiple baseline AB (baseline/intervention) design. In this study four participants were observed for 4 to 6 classes in baseline, then the peer tutors were trained and implemented for 6 to 9 classes. The participants' performance during their baseline phase was compared to their performance during the intervention phase. If the participants' behaviors changed in the desired direction upon intervention, there is a strong possibility that the independent variable (intervention of peer tutors) was responsible for the change (Lieberman, Newcomer, McCubbin, and Dalrymple, 1997).

Visual analysis was used to inspect and interpret ALT-PE data paths for each participant. Visual analysis was also used to determine if any changes were present in the data patterns and if these changes corresponded to the intervention of trained peer tutors. If ALT-PE percentages increased only when intervention was implemented, then change could be attributed to the use of peer tutors. Data paths within and between phases were also analyzed using visual analysis. Mean scores for each phase were established and compared to determine if ALT-PE increased during intervention (See Table 1). Further analysis consisted of noting variability and trends within each phase, and changes in level and overlap between phases (See Figure 1). Percentage of overlap was calculated by counting the number of intervention data points which overlap with baseline data and dividing that number by the total number of data points in intervention. After considering all the factors discussed, the effect of trained peer tutors on ALT-PE was determined using visual analysis.

The researcher has included the amount of ALT-PE of a classmate as a comparison of the amount of time students without visual impairments spend engaged in physical education. The researcher and the physical education teacher chose the classmate. The classmate was determined to be the closest in motor skill to the participant. No classmates included in the data were peer tutors.

Table 1
Means of Percent ALT-PE Across Phases

Name	Baseline	Peer Tutoring	% Improvement
Billy	19.2	58	38.8
Roland	21.4	51	29.6
Betty	37.8	48.5	10.7
Sally	55.8	60	4.2

Table 2
Means of Percent ALT-PE for Open and Closed Skill Activities Across Phases

Name	Baseline		Intervention	
	Closed	Open	Closed	Open
Billy	5	23.9	58.8	57.2
Roland	22.3	20.2	51.6	47.7
Betty	37.9	37.5	53.2	43.8
Sally	56	54.8	75.3	53.9
Average	30.3	34.1	59.7	50.7

Table 3
Mean Percentage Difference between Participant and Classmate Across Phases

Name	% Difference Baseline	% Difference Intervention	% Difference
Billy	58.3	9.3	+49
Roland	32.1	3.9	+28.2
Betty	23	17.8	+5.2
Sally	6.3	7.9	-1.6

Table 4
Data Points and Corresponding Units Across Participants

Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Billy	W	W	W	A	A	S	S	H	H	H	BB	BB	NA
Roland	VB	D	D	F	F	BB	H	S	S	S	S	S	NA
Betty	S	S	UF	KB	B	H	H	H	SB	SB	SB	NA	NA
Sally	H	ST	D	D	ST	ST	SC	SBB	ST	TF	SB	SB	LX

W=Wrestling; A=Archery; S=Swimming; H=Hockey; BB=Basketball; VB=Volleyball; D=Dance; F=Fitness; UF=Ultimate Frisbee; KB=Kickball; B=Bowling; SB=Softball; ST=Stations; SC=Scooter; SBB=Scooter Basketball; TF=Track and Field; LX=Lacrosse; NA=Not Applicable

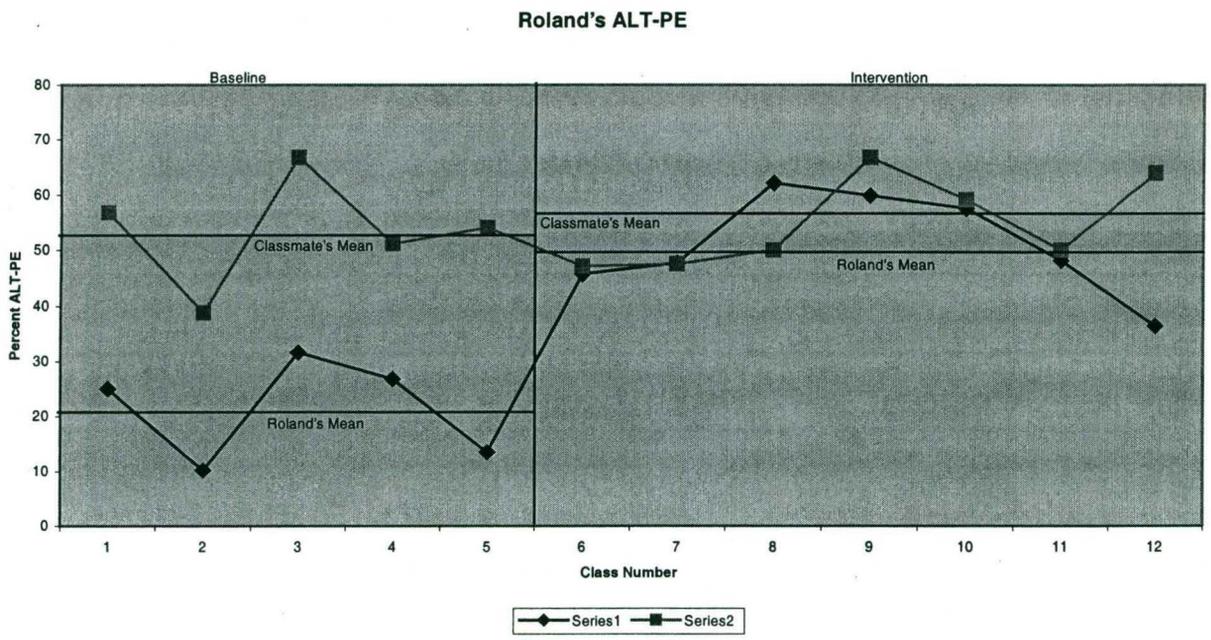
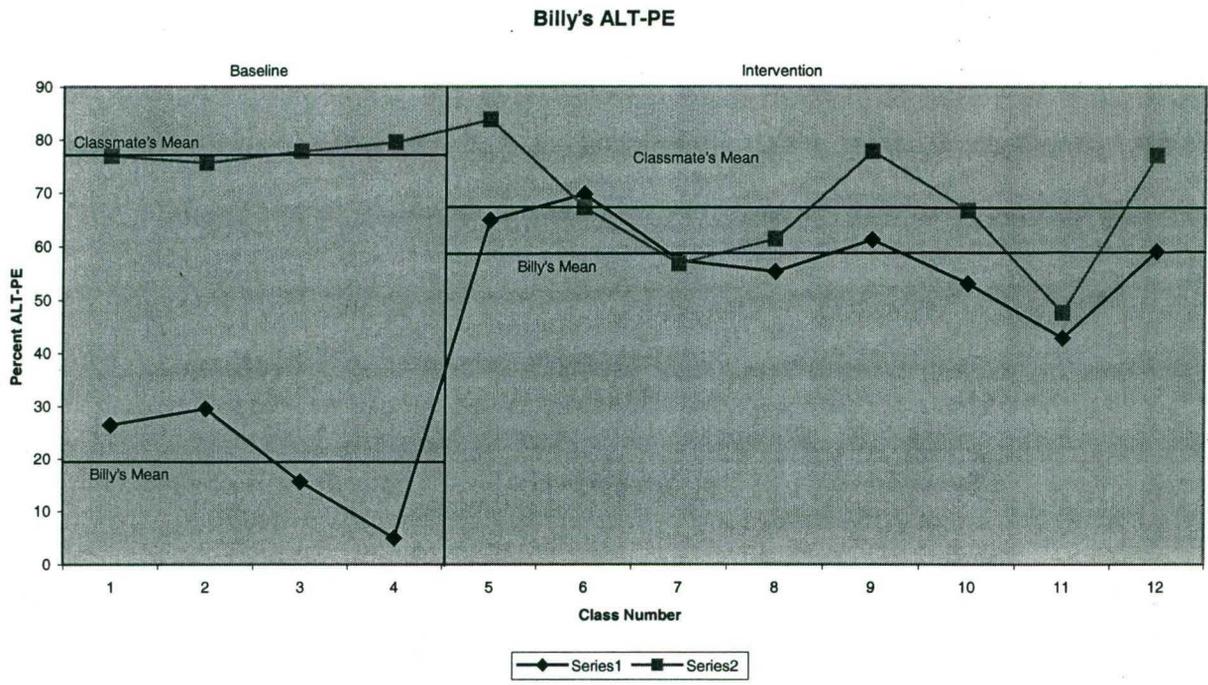


Figure 1. Percentage of Academic Learning Time-Physical Education
 Series 1 = Participant; Series 2 = Classmate

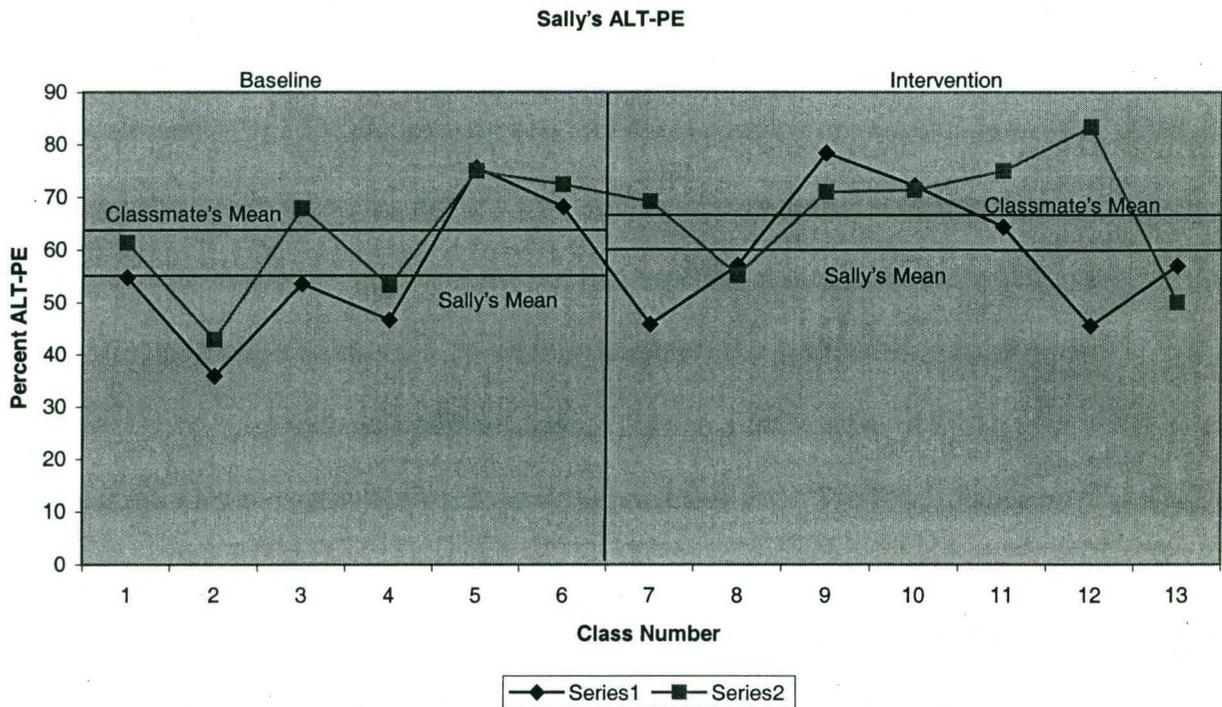
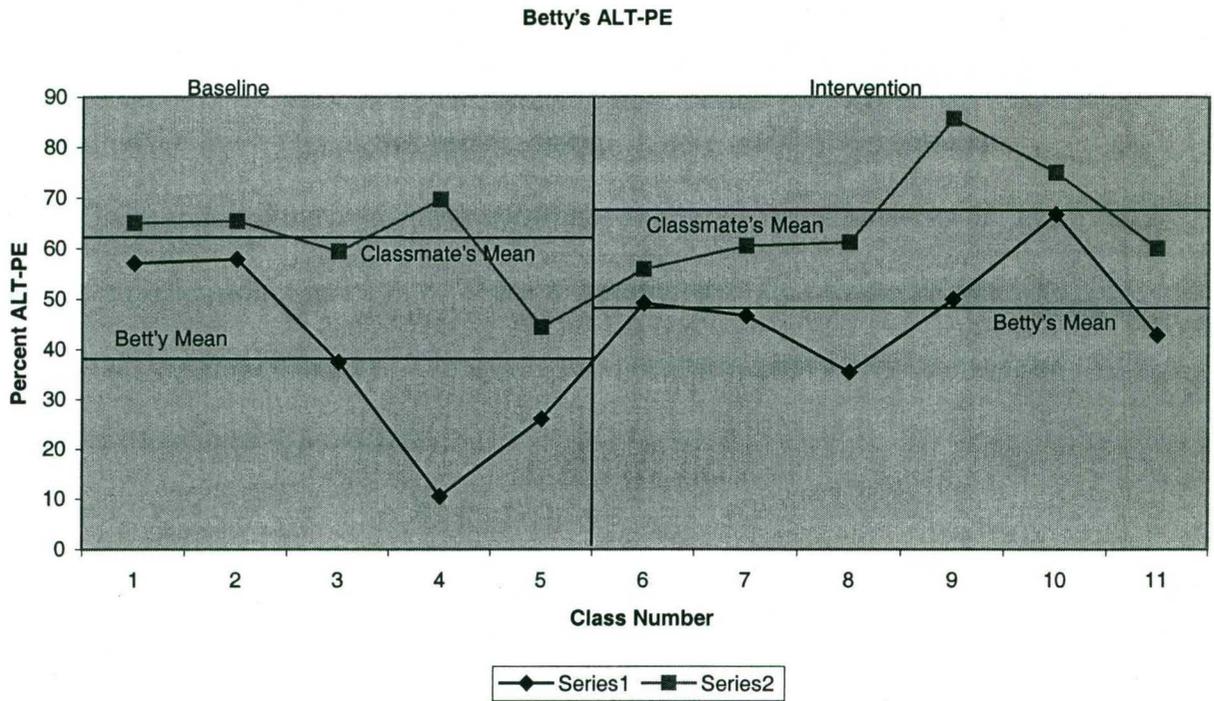


Figure 1 (continued). Percentage of Academic Learning Time-Physical Education
 Series 1 = Participant; Series 2 = Classmate

The following is a description of each participant's percentage of Academic Learning Time-Physical Education. Data were visually analyzed by describing the trends and variability within phases and the change in level and overlap between phases. I have arranged the participants according to level of visual impairment. I will discuss participants 1 and 3 first. These two participants are completely blind and classified in the B1 category. The second two participants have very little vision and are classified in the B2 category.

B1 Participants

Participant 1 – Billy

Billy was an eleven-year-old sixth-grade boy who is completely blind and, according to his teacher, well behind his peers in motor performance. He enjoyed physical education, but was not included in the class during most activities due to his visual impairment. For a list of class numbers and corresponding units see table 4.

Billy had a steady trend during the first two baseline observations (both wrestling) with a significant downward trend over the last two baseline observations (wrestling, archery). He had a mean score of 19.2% during baseline. The intervention phase had slightly more variability with no significant trend. He had a mean score of 58% during peer tutor intervention. His mean score improved 38.8%. The level change from baseline to peer tutor intervention was 56.9% with 0% overlap.

The significant change in level, no overlap, and the 38.8% difference in means show an increase in the amount of ALT-PE from baseline to the peer tutor intervention phase for participant 1. The peer tutors were successful in helping to increase the ALT-PE for Billy. He benefited from the one-on-one instruction,

physical guidance, and feedback provided by the peer tutors. He also benefited from the social interaction with the peer tutors, which was evident in Billy's eagerness to participate in physical education class.

Participant 3 – Betty

Betty was a sixteen-year-old girl in the eleventh-grade who is completely blind. She liked physical education and was involved in the class on a consistent basis. She would attempt skills, yet would often perform them incorrectly due to lack of instruction and opportunity. Various classmates assisted Betty during physical education class. The girls who assisted Betty had no training as peer tutors. Two of the classmates would eventually be trained by the researcher to be peer tutors. For a list of class numbers and corresponding units see table 4.

Betty had a variable baseline with a significant downward trend during baseline classes 3 and 4 (ultimate Frisbee, kickball) and a slight upward trend to finish the baseline phase. She had a mean score of 37.8% during the baseline phase. The peer tutor intervention phase had less variability with a significant upward trend during intervention classes 9 and 10 (both softball). She had a mean score of 48.5% during peer tutor intervention. Her mean score improved 10.7%. The level change from baseline to peer tutor intervention was 23.1% with 83.3% overlap.

Although there was a large amount of overlap, the significant change in level and 10.7% difference in mean score show an increase in the amount of ALT-PE from baseline to peer tutor intervention. The peer tutors were successful keeping Betty motor engaged at an appropriate level and this helped to increase her ALT-PE. She

benefited greatly from the verbal feedback, increased opportunities to respond, and physical guidance.

Summary of B1 Participants

It is the researchers' conclusion that both B1 participants improved their ALT-PE due to the intervention of peer tutors. Billy improved his mean score by 38.8% between phases. He also had a level change of 56.9% between baseline and peer tutor intervention with no overlap. Sally's mean score improved 10.7% between phases. She demonstrated less variability during the intervention phase. She also had a level change of 23.1% between baseline and peer tutor intervention. Although there was significant overlap, it is concluded that the overlap was due to the activity and not the intervention.

B2 Participants

Participant 2 – Roland

Roland was a fourteen-year-old boy in the eighth-grade who is completely blind in his right eye and has little vision in his left eye. He had a very weak upper body and arm strength and very little flexibility. He liked physical education and participated fully in most activities but often at a motor inappropriate level. Two classmates assisted Roland during the baseline period. Neither classmate had trained to be a peer tutor but both would eventually be trained by the researcher to be peer tutors. For a list of class numbers and corresponding units see table 4.

Roland had a variable baseline during observation classes 1,2, and 3 (volleyball, dance, dance) with a downward trend during observation classes 4 and 5 (both fitness). He had a mean score of 21.4% during baseline. The intervention phase was

slightly more variable with a steadier trend. Intervention began with an upward trend during the first three intervention classes and a downward trend during the last four intervention classes. He had a mean score of 51 % during peer-tutor intervention. His mean score improved 29.6%. The level change from baseline to peer tutor intervention was 32.2% with 0% overlap.

The significant change in level, no overlap, steadier trend during intervention, and the 29.6% difference in means show and increase in the amount of ALT-PE from baseline to peer tutor intervention phase for Roland. The peer tutors were successful in keeping him motor engaged at an appropriate level, giving him more opportunities to respond, and increasing his ALT-PE. He benefited greatly from the feedback and physical guidance of the peer tutors. His motor responses were more stable and consistent due to the peer tutors.

Participant 4 – Sally

Sally was a nine-year-old girl in the third-grade who is completely blind in her left eye and has only peripheral vision in her right eye. Sally loves physical education and is a great athlete. She has very high motor abilities, but has trouble tracking moving objects. For a list of class numbers and corresponding units see table 4.

Sally had a variable baseline with a slight downward trend toward the end. She had a mean score of 55.8% during baseline. The intervention phase was slightly less variable with an upward trend during intervention classes 7 through 9 (soccer, scooter basketball, stations) followed by a downward trend during classes 10 through 12 (track and field, softball, softball). She finished out her intervention with an upward trend. She had a mean score of 60% during peer tutor intervention. Her mean score

improved 4.2%. Her level decreased 22.4% from baseline to peer tutor intervention and she had 85.7% overlap.

Although there was an increase in mean scores between phases and less variability in the peer tutor phase, the large overlap and negative level change make it difficult to attribute the change in ALT-PE to the implementation of the peer tutors. Despite conflicting results, it was evident that the peer tutors did contribute to Sally's success in increasing her ALT-PE. She was afforded extra help when needed and challenged when appropriate.

Summary of B2 Participants

It is the researcher's conclusion that one of the two B2 participants improved their ALT-PE due to the intervention of peer tutors. Roland's mean score improved 29.6% between phases. His level change was 32.2% with no overlap. He also had a steadier trend during the peer tutor intervention. The peer tutors were successful in keeping him engaged at an appropriate level and giving him the extra help needed to achieve an increase in ALT-PE.

Sally did show an increase in her mean score across phases and she had less variability during the peer tutor intervention. With a decrease in level and significant overlap, it is difficult to attribute her increases in mean and decreased variability to the intervention of peer tutors. The researcher concludes that the peer tutor intervention was not responsible for the increase in ALT-PE.

Trained vs. Untrained Peer Tutors

A natural comparison of trained vs. untrained peer tutors presented itself during this research study. Untrained classmates aided participants two and three during the

baseline phase of this study. This gave the researcher the opportunity to compare the use of untrained peers to trained peer tutors. The data from participant two (Roland) demonstrates that trained peer tutors were more effective than untrained peers in helping the participant to achieve high levels of ALT-PE. This is demonstrated by the 29.6% change in means from baseline to intervention of the trained peer tutor. It is noteworthy to point out that the downward trend in data point twelve for Roland happened on a day when all trained peer tutors were absent from school. A different classmate who was untrained helped Roland and the trend did not follow that of his classmates, which had been the case until that point. The data from participant three (Betty) demonstrates a similar conclusion. The trained peer tutors helped Betty achieve higher levels of ALT-PE than the untrained peers. The difference between baseline and peer tutor intervention was 10.7%. It is noteworthy to point out that the majority of untrained peers were eventually trained by the researcher to be peer tutors. The increase in ALT-PE for participants two and three can be attributed to the training of the peer tutors.

Open vs. Closed Skill Activities

The researcher also had the opportunity to assess the difference in ALT-PE for open skilled activities, such as hockey or wrestling, and closed skilled activities, such as archery or station work, across participants and phases (See Table 2). The data demonstrates that, as a whole, peer tutors were effective in helping to increase ALT-PE of participants during both open and closed skill activities. The increase in ALT-PE during open skill activities was 16.6%. The increase in ALT-PE during closed skill activities was 29.4%. This demonstrates that trained peer tutors are effective in

helping to increase the ALT-PE of persons with visual impairments during both open and closed skilled activities.

Mean Comparisons between Participants and Classmates

One fact that presented itself throughout the baseline phase was the large differences in mean scores between the participants and their classmate (See Table 3). Differences between means during baseline ranged from 58.3% to 6.3%. The intervention of the peer tutors helped to decrease the difference of ALT-PE between all but one of the participants and their classmate. Differences during the intervention phase ranged from 17.8% to 3.9%. Percent improvement ranged from +49% to -1.6%. This data demonstrates that the use of trained peer tutors can help increase the ALT-PE of persons with visual impairment to levels that are comparable to their sighted peers.

Summary

Overall, the means for all participants increased by an average of 20.8%. The variability improved in half of the participants and trends were steadier during intervention for all but one participant. The change in levels also increased in all but one participant. It was also demonstrated that trained peer tutors helped persons with visual impairments achieve more ALT-PE than untrained classmates could. In addition, trained peer tutors are effective in helping to increase the ALT-PE of persons with visual impairments during both open and closed skill activities and decreasing differences in ALT-PE between persons with visual impairments and their classmates. Therefore, Academic Learning Time-Physical Education improved across all students upon implementation of the trained, same-age peer tutors.

Chapter 5

Discussion

It is concluded that the peer tutors successfully taught the participants with visual impairments in the intervention phase of this study. The peer tutors gave instruction, demonstrated skills, gave feedback, physically guided participants, and monitored behavior. The peer tutors effectively used the teaching and feedback techniques that the researcher taught them during the peer tutor training. They used the hierarchy of verbal cue, demonstration, physical guidance, and tactile modeling as was intended. As a result of peer tutoring, the participants in this research study were able to increase their level of Academic Learning Time-Physical Education (ALT-PE). The increase in ALT-PE seems to be a direct result of the involvement with peer tutors during activities.

The results of this research study show that utilizing trained, same-age peer tutors during physical education is beneficial for students with visual impairment included in the general physical education class. Peer tutors helped to increase the amount of time that participants were engaged in motor activity at a motor appropriate level. This is evident by the increases in ALT-PE across participants. Peer tutors also helped to increase the consistency of motor performance of the participants by reducing variability during intervention in half the participants. The presence of the trained, same-age peer tutors positively influenced the amount of ALT-PE for all but one participant, Sally.

Participant 1 – Billy

Billy was an eleven-year-old boy in the sixth-grade who is completely blind. He had physical education schedule that consisted of five days on and five days off for a half-hour each class. Through discussions with Billy, his mother, and his aid the researcher found out he liked physical education but was often excluded due to his visual impairment. Billy has been involved in physical education throughout his school career. To what extent is not certain. Billy is well behind his peers in motor performance and fitness. This was apparent through observation. Billy's teacher has seventeen years teaching experience, is certified in physical education, has had some training in adapted physical education, but had no experience with persons with visual impairments. When we asked for volunteers for peer tutors Billy had five classmates' volunteer. We trained all five using the described training method in the chapter three.

Before the baseline began, the class was involved in soccer. Billy was excluded from this activity because of his visual impairment and the teacher was not sure how to include him in soccer. Instead, Billy was working one-on-one with his aid on the adjacent field and in the hallway on soccer skills. The data from these two observations was omitted because it was not inclusive physical education. Baseline began with three wrestling classes (classes 1-3) and one archery class (class 4) where Billy arrived to class late and left early each day. He averaged only nine minutes and thirty second of physical education time during the baseline observation.

The first intervention class was also archery (class 5). The level change between the two archery classes increased a staggering 59.9%. This proves the effectiveness

of a peer tutor can be immediate. He also increased his physical education time from nine minutes and forty-three seconds (archery class 4) to fourteen minutes and forty seconds (archery class 5) between the two archery classes. Again, this shows that the peer tutor effects can be immediate. The remainder of the intervention classes included swimming (classes 6-7), hockey (classes 8-10), and basketball (11-12). Billy went from non-participation in soccer (a team invasion game) to full participation at high levels during hockey and basketball (also team invasion games). This demonstrates that peers tutors can be effective in helping students with visual impairment participate in team games.

The greatest aspects of the peer tutor program in Billy's case were: (a) he went from low participation, arriving late, and leaving class early to full participation and staying the majority of the class period; (b) the teacher went from not being able to include Billy to making modifications in hockey, archery, and basketball so he could be included and successful; and (c) Billy went from walking to class alone and leaving alone to having three to four classmates asking if they can walk Billy to and from class.

As stated above, the teacher had as much of a learning experience as the peer tutors. Before the research, the teacher did not include Billy in many activities due to lack of knowledge of how to include him. Through interactions with the researcher, the teacher made many great modifications during the intervention. For instance, he filled a can with nuts and bolts and hung it from the basketball hoop. When it was Billy's turn to shoot, one of the peer tutors would shake the can by pulling the string so Billy would know where the hoop was located. He also put small bells in an old

tennis ball so Billy could be involved in the hockey games. During swimming, he gave the peer tutor a whistle to blow so Billy would know which direction to swim. During fitness testing, he set up a guide wire so Billy could complete the shuttle run. During archery he put balloons on the target so Billy would know when he hit it. Billy's success in increasing his ALT-PE was a team effort between the researcher, peer tutors, and teacher.

Participant 2 – Roland

Roland was a fourteen-year-old boy in eight-grade who is completely blind in his right eye and has very low vision in his left eye. Roland had physical education every three days for eighty-five minutes. Roland expressed that he liked physical education but does not have the opportunity to engage in physical activity very often. He has participated in physical education every year throughout his schooling but is often excluded during contact activities and sent to the library or occasionally to the weight room. Through discussion with his aid, it was discovered that Roland has a very weak upper body and arms and has limited flexibility. He has a special weight training and flexibility program that he engages in a few times a week outside of his physical education class.

Roland's teacher has twenty-nine years experience. He is certified in physical education and has training in adapted physical education. He did have experience with students with visual impairments. Roland had two classmates volunteer to be peer tutors. The researcher trained the peer tutors using the methods described previously.

During baseline, Roland received one-to-one help from the teacher and the students who would eventually be trained as his peer tutors. Roland's baseline included classes in volleyball (class 1), square dancing (classes 2-3), and fitness (classes 4-5). He had difficulties in the volleyball unit due to his lack of hand strength. He had difficulties in square dancing due to his orientation and mobility skills. He had difficulties with fitness due to his muscle weakness and low flexibility.

During intervention Roland participated in hockey instruction (class 7), basketball (class 6), and swimming (classes 8-12). The peer tutors did an excellent job keeping Roland motivated and participating at an appropriate level. The peer tutors utilized verbal cues and physical guidance as their main techniques of instruction. The teacher would not let Roland participate in the hockey unit past the initial instruction and practice class. He was sent to the weight room during these classes. This data was not included in the intervention phase. The teacher made the decision not to allow Roland to participate despite suggestions and efforts made by both the researcher and Roland's aid. During the basketball unit, the peer tutors worked together. One tutor would tap on the basket with the cane while the other helped Roland with his form. During dribbling practice and games, only one tutor worked with Roland. During the swimming unit, the peer tutor utilized flotation devices to aid Roland. Roland's ALT-PE was higher during swimming than his classmate's because he had his own equipment while the others had to share. He had more opportunities to respond. Both peer tutors were absent the very last class in the intervention phase. A classmate stepped in to fill the role as his peer tutor. The boy did a great job, but he did not have the proper training. During this class, Roland had

the lowest amount of ALT-PE during the intervention. This is noteworthy because it shows the difference between trained and untrained peer tutors. This may have also increased the variability for Roland during intervention. Also noteworthy is the fact that the students who were his peer tutors also helped him during the baseline phase. This demonstrates the difference between trained (intervention) and untrained (baseline) peer tutoring.

Although Roland's teacher has had experience working with persons with VI and has had training in adapted physical education, he made no significant modifications to the equipment used during the activities. Roland was given the same equipment as the rest of the class.

Participant 3 – Betty

Betty was a sixteen-year-old girl in the eleventh-grade who is completely blind. Her physical education class met every four days for 100 minutes. She liked physical education and was involved in the class on a consistent basis. She would attempt skills, yet would often perform them incorrectly due to lack of instruction and opportunity. Betty has been involved in physical education throughout her school career. Through observation and discussion with teacher it has been concluded that Betty has motor skill deficiencies and is in good physical condition. Betty already had classmates that would help her during class. The classmates were not trained to be peer tutors until after a baseline was established.

Betty's teacher has four years teaching experience. She is certified in physical education as well as special education. She has had previous experience teaching students with visual impairments and has had training in adapted physical education.

Betty had four girls volunteer to be peer tutors. Three of the four girls were very athletic and challenged Betty. The fourth girl was similar in motor skill to Betty. The researcher trained all peer tutors using the training method described previously.

During baseline, Betty participated in swimming (classes 1-2), ultimate frisbee (class 3), kickball (class 4), and bowling (class 5). The teacher had peers working with her, but none trained as peer tutors. The first two baseline classes were swimming. There were high percentages of ALT-PE due to the nature of the activity. There was a lot of waiting in line and the skills were very basic (diving in feet first, front crawl, going off the board). The next two baseline classes (ultimate frisbee and kickball) show a significant downward trend. During the third class, ultimate frisbee, different peers helped each time Betty was involved in the game. Some were better than others were. During baseline four (kickball) the peer working with Betty had her positioned in the back of the gym away from the action. She only moved her toward the ball on a few occasions. She occasionally left Betty to make a play on the ball. The only time Betty was motor engaged was during her turns to kick and run bases. During the last baseline class, bowling, the peer did not make the correct adjustment to the bowling ramp so the ball continuously went into the gutter.

During the peer tutor intervention, Betty participated in hockey (classes 6-8) and softball (classes 9-11). During hockey, the teacher used an auditory box in the goal so Betty would know where the goal was. She also used a softball-sized ball with bells in it to accommodate Betty. This worked very well. The peer tutors during class six and seven did an excellent job keeping Betty involved in the flow of the hockey game and getting her opportunities to respond at an appropriate level. Peer

tutor intervention class number eight had a very low percentage of ALT-PE compared to the previous two hockey classes. The third peer tutor, a girl who was not as motor skilled as the others, did not provide as much feedback as the other two peer tutors. She had Betty standing around a lot and did not have her involved in the flow of the game. She did not move Betty around as much as the previous two peer tutors did. She would often leave Betty to retrieve the ball and come back. This was counter-productive for Betty. The goal of the peer tutoring program was to give the participant more opportunities to respond and increase their ALT-PE. This is noteworthy because the result was a drop in percentage ALT-PE from the previous two hockey classes and the following class.

The last three classes in the intervention were all softball. There were very few opportunities to respond due to the large number of players in the field. The entire class had very few opportunities to respond. The peer tutors and Betty did a great job when they were presented with opportunities. The teacher used a beeping softball to facilitate the learning for Betty.

As demonstrated by the data, the peer tutors were successful in increasing Betty's ALT-PE. They were also successful in decreasing the variability of her motor performance. The high amount of overlap was caused by the high percentages of ALT-PE during the baseline swimming classes. These levels were high because of low opportunities to respond and engagement in beginning skills. The peer tutors did an excellent job keeping Betty involved at an appropriate level and the teacher did an excellent job modifying the learning environment.

Participant 4 – Sally

Sally was a nine-year-old girl in the third-grade who is completely blind in her left eye and has only peripheral vision in her right eye. She had higher vision than the other participants in the study. Her physical education class met every Monday and Wednesday for 45 minutes. Sally loved physical education and is a good athlete. She has very high motor abilities, but has trouble tracking moving objects. Sally has had physical education throughout her school career.

Sally's teacher has eight years teaching experience but only two years teaching experience in physical education. She is certified in physical education. She has experience with students with visual impairments but has had no training in adapted physical education. Sally had three girls volunteer to be peer tutors.

Given that Sally has such high motor skills the researcher decided to train all the girls, including Sally, using the reciprocal peer tutoring method. The training method is the same as discussed in chapter three. The difference is that Sally was also trained as a peer tutor. Instead of the focus being on helping her, the focus was on the girls helping each other. The girls would switch partners each day. This way all the girls would be a peer tutor to one another at some point.

Sally's baseline classes included hockey (class 1), station work (classes 2, 5-6), and dance (classes 3-4). The last two baseline classes were both station classes based on an Easter theme. There were many opportunities to respond and there were no wrong motor responses except to be engaged off task. The drop in level between phases may be due to the activity. The first peer tutor intervention was soccer (class 7). Sally was still engaged at a high percentage but the activity was more difficult

than the stations based on the Easter theme. The remaining intervention classes included scooter basketball (class 8), stations with a track and field theme (class 9), track and field (class 10), softball (classes 11-12), and lacrosse (class 13). There is a downward trend toward the end of peer tutor intervention. Sally was successful in increasing her mean across phases and decreasing her variability. It is uncertain whether this was due to the intervention of the peer tutors. This may have been due to the nature of the activity.

Conclusion

It has been demonstrated by this study that peer tutors are effective in helping to increase the amount of ALT-PE for persons with visual impairments. This finding supports previous research conducted by Lieberman, Newcomer, McCubbin, and Dalrymple (1997), Murata and Jansma (1997), Webster (1987), Depaepe (1985), and Knowles, Aufderheide, and McKenzie (1982) on the effects of peer tutors on the ALT of students with disabilities. The findings in this research study also support the conclusion of Houston-Wilson, Dunn, van der Mars, and McCubbin (1997), that trained peer tutors are more effective than untrained peer tutors in assisting students with disabilities improve their motor performance. This was demonstrated by the increase in ALT-PE of participant two (Roland) and three (Betty) (see Figure 1). Both participants had untrained peer tutors during baseline and trained peer tutors during intervention. This study also supports the finding of Temple and Walkley (1999) that students with disabilities are less motor appropriate during physical activity than their peers without disabilities. This was demonstrated by the difference

in percent mean scores between the participants and his/her classmate during both baseline and intervention (see Figure 1).

The teachers involved in this study made various efforts to engage the students in class. This was due to the various equipment modifications used. During basketball Billy's teacher modified a pop can that would hang off the basket by a coat hanger with a string attached to it. The can had nuts and bolts inside so when the peer tutor would move the can by the string Billy could hear the rattle. This idea worked great. Roland's peer tutors would use his cane to tap on the basket during basketball. It was little harder to hear but it also worked. During hockey, Billy's teacher cut an old tennis ball and inserted some bells. This enabled Billy to hear the ball as it traveled along the floor. It was difficult to hear but it did work. Betty's teacher used a softball-sized plastic ball with bells in it during hockey. This worked great because it made a louder sound and was easier for Betty to hit. Her teacher also used an auditory box, which she placed inside the opponent's goal. This allowed Betty to know where her target was when shooting. This also allowed her to position herself in the right direction during the game. During softball Betty's teacher used a beeping baseball. This worked really well. The ball omitted a loud sound that was easy to hear. Overall, these modifications were noteworthy and point to the possibilities of what can be done with effort and creativity.

Summary

Four participants with visual impairment and ranging in grades from 3-11 were studied to analyze the effects that trained, same-age peer tutors had on the Academic Learning Time-Physical Education (ALT-PE) of persons with visual impairments.

Each participant with a visual impairment had at least two trained peer tutors assigned to work with him or her on an individual basis during their general physical education class. A delayed multiple A/B (baseline/intervention) design was utilized across subjects. All classes were videotaped and analyzed up to a 15-minute period using six seconds observe and six seconds record partial interval recording. The focus of the observation was to document the percentage of ALT-PE of each class in each phase for each participant. Interobserver and intraobserver reliability was calculated using the formula: $\text{agreement} / (\text{agreement} + \text{disagreements}) \times 100 = \% \text{ agreement}$ (van der Mars, 1989).

In all cases, the peer tutoring increased the mean percentage level of ALT-PE. In all but one case, peer tutoring increased the level of ALT-PE between baseline and intervention. In half the cases, peer tutoring decreased the variability of motor performance. Also noteworthy, three participants decreased the gap in ALT-PE between their classmate's ALT-PE and their own by an average of 27.5%. All cases were studied in the general physical education classes. It appears that peer tutoring can have a positive effect on the ALT-PE of students with visual impairments in general physical education.

Suggestions for further research are:

1. Replicate the study utilizing more participants.
2. Replicate the study using teachers that utilize inclusion.
3. Replicate the study using a specified age group.
4. Replicate the study utilizing parental involvement.
5. Replicate the study over a longer period.

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Appendix A



SUNY BROCKPORT

Grants Development Director

Date: December 17, 2001
To: Brian Wiskochiln
From: Colleen Donaldson for
Institutional Review Board
Re: **Project IRB #2001-155**

Your proposal "Effect of peer tutors on Alt-PE for persons with visual impairments" has been approved. If you wish to continue this project beyond one year, federal guidelines require that the information below (items 1-6) will need to be provided to the IRB before the project can be approved for a second year. Please note also that if the project initially required a full meeting of the IRB (Category III proposal) for the first review, then continuation of the project after one year will again require full IRB review.

Information required by the IRB for continuation of the project past the first year includes the following:

1. number of subjects involved in year one a description of any; adverse events or unanticipated problems involving risks to subjects or other, withdrawal of subjects from the research or complaints about the research during the previous year
2. a summary of any recent literature, findings, or new information about any risks associated with the research
3. a copy of the current informed consent document
4. a general summary of research findings from year one
5. reason why project needs to be continued into a second year or more.

Please contact Colleen Donaldson, Office of Academic Affairs, immediately if:

- the project changes substantially,
- a subject is injured,
- the level of risk increases.

A final report of less than one page that focuses on human subjects participation in the process is due on or before December 17, 2002.

CD:mlm

Appendix B

Brian Wiskochil
State University of New York
Dept. Physical Education & Sport
350 New Campus Drive
Brockport, NY, 14420-2914
(716) 395-2629

Date:

Dear Parent/Guardian,

I am writing to tell you about a study that I would like to do in _____ physical education class. The purpose of my study is to determine the effect of trained peer tutors on the Academic Learning Time in Physical Education (ALT-PE) of children who are blind and/or visually impaired in inclusive physical education setting. The ALT-PE is the amount of time that a person is engaged in motor appropriate behavior. It is hoped that _____ will assist in increasing the ALT-PE level of his/her classmate with a visual impairment during the course of the study.

In order to determine the amount of ALT-PE, the person with the visual impairment will first be observed while participating in his/her regular physical education class without the assistance of a peer tutor. We will be using videotaped data to observe motor skill and physical activity levels. The timeline for baseline data collection is about 4-6 classes.

The next step is assigning each blind or visually impaired student with a sighted peer tutor. The peer tutor will receive training to insure that his/her intervention with the student will be appropriate. The training program will consist of teaching your child various teaching techniques and feedback skills. The amount and type of training received by the peer tutor will be an important part of the study. Your child will be expected to participate in the training session during his/her designated class time. This is to ensure appropriate instruction by the peer tutor.

The overall timeline of the study is approximately 10 weeks. Each aspect of this study will occur in your child's regularly scheduled physical education class. The teacher as presently assigned will be present in the class.

The results of study will be shared with you. Confidentiality will be maintained throughout the study. Neither _____ first or last name will be used in the research project. The students will receive a number that will identify him/her for the purpose of the investigation. The students will still be addressed by name in class.

Participation in this study is voluntary. Refusal to participate will not result in penalty or loss of participation in physical education. You may withdraw _____ from the study at any time. This is an observational study, there is no risk or discomfort involved in this study. In the event of an injury during the course of the study the University will not be responsible to provide the student with compensation or medical treatment.

Dr. Lauren Lieberman, Dr. Marli Nabeiro, and Brian Wiskochil will supervise the study. The study will start _____. If you have any questions or concerns please contact me at (716) 395-2629. If you wish to allow _____ to be involved in this

study please sign the enclosed informed consent form and return it to me in the self-addressed stamped envelope provided. Thank you for you for your cooperation. I look forward to working with you and _____.

Sincerely,

Brian Wiskochil
SUNY Brockport Graduate Student

INFORMED CONSENT

I have read and understand the purpose of this study.

I give my permission for my son/daughter to participate in this study.

(Child's name)

(Parent/guardian signature)

(Parent/guardian signature)

Investigator's statement:

I have explained the purpose and procedures of this project to the participant's parent/guardian and answered all questions. I have given a copy of this informed consent to the parent/guardian.

Lauren J. Lieberman

Date

Marli Nabeiro

Date

Brian Wiskochil

Date

Appendix C

Dear Principal _____,

My name is Brian Wiskochil and I am a graduate student at SUNY Brockport. I am writing to tell about a study that I would to do in your school. The purpose of my study is to determine the effect of trained peer tutors on the Academic Learning Time-Physical Education (ALT-PE) of children who are blind or visually impaired in inclusive physical education. ALT-PE is the amount of time that a person is engaged in motor appropriate behavior. It is hoped that a sighted peer tutor will increase the ALT-PE level of the student who is visually impaired. The physical education teacher and parents of the student have already given me consent. It is hoped that you will give me permission to carry out my research in your school.

Sincerely,

Brian Wiskochil
SUNY Brockport Graduate Student
(520)395-2629

Appendix D

Dear Parent/Guardian,

My name is Brian Wiskochil and I am a graduate student at SUNY Brockport. I am writing to you to tell you about a study that I would like to do at St. John of Rochester in _____ physical education class. The purpose of my study is to determine the effect of trained peer tutors on the Academic Learning Time in Physical Education (ALT-PE) of children who are blind or visually impaired in inclusive physical education. ALT-PE is the amount of time that a person is engaged in motor appropriate behavior. It is hoped that a sighted peer tutor will increase the ALT-PE level of the student who is visually impaired.

_____ has been chosen by his/her classmate and/or physical education teacher to be a peer tutor for this study. If you agree to allow _____ to participate in this study he/she will be provided with introductory training to assist a student who is visually impaired in physical education. This training consists of teaching the student various teaching techniques and feedback skills. The training will take place during _____ physical education class.

Your son/daughter will already attend the physical education class with the student he/she is tutoring. The overall timeline for this study is approximately 15 class periods. Each aspect of this study will occur in your child's regularly scheduled physical education class. The teacher as currently assigned will be present in the class.

The results of _____ performance will be shared with you. Confidentiality will be maintained throughout the study. Neither _____ first or last name will be used in the research project. The student will receive a number that will identify the individual for the purpose of the investigation, yet they will still be addressed by name in class.

Participation in this study is voluntary. Refusal to participate will not result in penalty or loss of participation in physical education. You may withdraw _____ from the study at any time. This is an observational study. There is no risk or discomfort involved in this study. In the event of an injury during the course of the study SUNY Brockport will not be responsible to provide the student with compensation or medical treatment.

Dr. Lauren Lieberman, Dr. Marli Nabeiro, and I will supervise this study. The study will start ASAP. If you have any questions or concerns please contact me at (716) 395-9754. If you wish to allow _____ to be involved in this study, please sign the enclosed informed consent form and return it to his/her teacher. Thank you for your cooperation. I look forward to working with your son/daughter.

Sincerely,

Brian Wiskochil

INFORMED CONSENT

I have read and understand the purpose of this study.

I give my permission for my son/daughter to participate in this study.

(Child's name)

(Parent/guardian signature)

(Parent/guardian signature)

Investigator's statement:

I have explained the purpose and procedures of this project to the participant's parent/guardian and answered all questions. I have given a copy of this informed consent to the parent/guardian.

Lauren J. Lieberman

Date

Marli Nabeiro

Date

Brian Wiskochil

Date

Appendix E

Tutor Training Handout

Verbal Cue/Sign Cue

A signal or sign to tell someone what to do.

Examples:

- " John run around the cones."
- " Jane it is your turn for pull-ups."
- " Let's stand on the black circle."
- " Sara show me the crab walk"

Model

Modeling is a way of demonstrating how to do the activity. After you give a verbal cue, if the student does not do the activity or does the activity wrong you should repeat the cue and demonstrate what it is you want him or her to do.

Examples:

- " Mary hop like this."
- " Continue to perform sit-ups like this."
- " Watch me participate in the relay race."
- " When we get to station 3 do jumping jacks like this."

Physical Assistance

Physical assistance is used to help the student if he or she is unable to do the activity after you have given a verbal cue and model. You should only physically assist the student by directing his or her body part with your hands.

Example:

Stand behind the student and physically assist with a sit-up.

Stand sideways in front of a student holding hands, bend knees, and jump over the rope.

Tap the student on the shoulder when it is his/her turn to run, or participate in fitness activities.

Feedback

Positive Feedback

A supportive statement about the students motor skill response.

Examples:

- "Good skipping"
- "Nice crab walk"
- "Great"
- "Wow"

Positive Specific Feedback

A supportive statement that includes exact information about what was good about the motor skill response.

Examples:

- "Nice reaching up with your jumping jacks."
- "Great high knees with your skip."
- "I like the way you use your arms in your run."
- "That's the way to keep your feet moving in that station."

Skills

Cardiovascular Endurance

Running, skipping, galloping,, hopping, walking, sliding

Muscle Strength and Endurance

Sit-ups, crab walk, pull-ups, push-ups

Flexibility

Sidebends, toetouches, trunk twists, hurdlers stretch, butterfly, sprinters stretch

Examples of Scenarios:

Scenario 1

Tutor: Cue: "Mary jump over the rope"

Student: acceptable response

Tutor: Positive Specific Reinforcement

"Good job jumping over the rope so many times."

Scenario 2

Tutor: Cue: "John do five push-ups"

Student: unacceptable response

Tutor: Positive General Feedback: "Good try"

Tutor: Repeat Cue and Model: John, do the push-ups like this."

Student: acceptable response

Tutor: Positive Specific Reinforcement

" Nice job, I like the way you bent your elbows all the way"

Scenario 3

Tutor: Cue: "Sue do the crab walk"

Student: unacceptable response

Tutor: Repeat Cue and Model: "Sue do the crab walk like this."

Student: unacceptable response

Tutor: Questions the subject: "Can I help you?"

Tutor: Provides Physical Assistance

Tutor helps student lift her hips up for a correct crab walk.

Student: acceptable response

Tutor: Positive Specific Reinforcement: That's the way to lift your hips, now try to do it yourself.

Appendix F

11.

Peer Tutor Quiz

Name _____

Date _____

Choose the correct answer

positive specific feedback
verbal cue
model

physical assistance
positive general feedback

1) A sign or signal to tell someone what to do is a _____
_____.

2) If the student does not understand how to do the skill, or is doing it wrong, you should _____.

3) You should give _____ _____ to the student only if the verbal cue and modeling does not work.

4) A statement that is supportive and gives exact information about what was good about a skill is called

5) A statement that is supportive but does not give exact information about what was good about a skill is called

12.

Circle the correct answer.

- 6) An example of a positive specific feedback statement is:
- a) "good job."
 - b) "good sliding sideways I like the way you use your arms."
 - c) "good try"
 - d) "slide like this"
- 7) The student you are working with is unable to gallop, a verbal cue you may give to help the student gallop is:
- a) "slide you back foot to your front foot then step with your front foot again."
 - b) "gallop"
 - c) "try again"
 - d) "you will get it this time"
- 8) After giving a verbal cue to jump with knees bent, the student is unable to do the skill correctly, you say:
- a) "almost try again."
 - b) "that was pretty good"
 - c) "watch me, bend your knees and jump."
 - d) "good jump."
- 9) After giving a verbal cue and model for the student, he or she is still unable to perform a hurdlers stretch correctly, you say:
- a) "is it o.k. if I help you?" and if the student agrees sit beside him and put hand on outstretched leg.
 - b) "do you want me to take your turn for you?"
 - c) "do you want to do something else?"
 - d) "try again, I know you will get it."
- 10) "Good job throwing is an example of:
- a) positive specific statement.
 - b) corrective feedback statement.
 - c) verbal cue.
 - d) positive general feedback statement.

Appendix G

ALT-PE Coding Sheet Demographic Information

Date:

Teacher:

School:

Class/Activity:

Observer:

Start Time:

Stop Time:

Duration:

Page _____ of _____

Observer comments on this class

Data Summary

Subject

Peer

% ALT-PE:

% Motor Engaged:

Name: _____

Activity: _____

Date: _____

ALT-PE CODING SHEET

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
L1																									
L2																									
L1																									
L2																									
L1																									
L2																									
L1																									
L2																									
L1																									
L2																									

First Level Categories (L1)

Motor Engaged (ME)

Not Motor Engaged (NE)

Subcategories (L2)

Motor Engaged (ME) subcategories

- Motor Appropriate (MA)
- Motor Inappropriate (MI)
- Waiting (Waiting)

Not Motor Engaged (NE) subcategories

- On-Task (OnT)
- Off-Task (OffT)

Appendix H

Teacher Information

Name:

Experience:

Experience with Visually Impaired Students:

Certified in Physical Education:

Any Pre-service Training in Adapted Physical Education:

Student Information

Name:

Age:

Extent of Visual Impairment:

Physical Education History:

Other Disabilities:

Peer Tutor Information

Name:

Age:

Name:

Age:

Name:

Age:

Name:

Age:

Name:

Age: