AN ABSTRACT OF THE THESIS OF

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Title: The Effect of Untrained and Trained Peer Tutors on the Motor Performance of Students with Developmental Disabilities in Integrated Physical Education Classes

Abstract approved: Dr. John M. Dunn

The purpose of this study was to investigate the effect of untrained and trained peer tutors on the motor performance of students with developmental disabilities in integrated physical education classes. This study utilized a single subject delayed multiple baseline design across subjects.

Six elementary age students with developmental disabilities and six nondisabled peer tutors participated in the study. The students were videotaped during their physical education class and data were analyzed on discrete motor skill responses. The students were assigned to one of two protocols. Protocol 1 consisted of three conditions; baseline, assistance by an untrained peer tutor, and assistance by a trained peer tutor. The results of Protocol 1 data revealed that trained peer tutors were effective at assisting subjects with developmental disabilities improve their motor performance, while untrained peer tutors were not. As a result of these findings Protocol 2 which consisted only of baseline and assistance by trained peer tutors, was utilized to replicate and provide additional support for the effect of trained peer tutors. The results of Protocol 2 revealed that trained peer tutors were effective at assisting subjects with developmental disabilities improve their motor performance in integrated physical education classes.

Trained peer tutors were provided with instruction in the following three teaching areas: cueing, feedback, and reinforcement. The cueing techniques followed the system of least prompts and included verbal cueing, modeling, and physical assistance. Feedback information consisted of positive general and positive specific reinforcement. Peer tutors were trained over two 30 minute sessions. Pre-established criteria required the peer tutors to implement the teaching behaviors with the researcher a minimum of 4 out 5 times, and receive a score of 90% or better on the peer tutor quiz. All peers were successful at meeting this criteria. Data were collected on the tutors' teaching behaviors throughout the study via a wireless microphone. The results of the peer tutor data revealed that the tutors were able to implement the tutor training program.

The results of this study demonstrate that elementary age peer tutors can be trained to provide assistance to students with developmental disabilities in integrated physical education classes. Recommendations for future research are provided based on the results of this study.
The Effect of Untrained and Trained Peer Tutors on the Motor Performance of Students with Developmental Disabilities in Integrated Physical Education Classes

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The Effect of Untrained and Trained Peer Tutors on the Motor Performance of Students with Developmental Disabilities in Integrated Physical Education Classes

CHAPTER 1

INTRODUCTION

Since 1973, legislation has mandated that individuals with disabilities be afforded equal access to or services under any program receiving federal funds, including physical education (Dunn & Fait, 1989). The Rehabilitation Act of 1973 (Public Law 93-112), states: "A recipient that offers physical education courses or that operates or sponsors intercollegiate, club, or intramural athletics shall provide to qualified handicapped students equal opportunities for comparable participation in these activities." (Public Law 93-112, 1973). In 1975, Public Law 94-142, The Education for All Handicapped Children Act was passed to ensure the rights of children with disabilities to a free and appropriate public education in the least restrictive environment. This law was reauthorized in 1990 and is now referred to as Public Law 101-476, The Individuals with Disabilities Education Act (IDEA) (P. L. 101-476, 1990). Specifically, IDEA states that children with disabilities are entitled to appropriate instruction at no cost to parents to meet the unique needs of the student, including classroom instruction, instruction in physical education, home instruction, and instruction in hospitals and institutions (Federal Register, 1977). In addition, the law stipulates that students with disabilities be provided education in least restrictive environment. The law states: "the handicapped child must be afforded the opportunity to participate in the regular physical education program available to nonhandicapped children unless:
1. The child is enrolled full time in a separate school or facility, or
2. The child needs specially designed physical education as prescribed in the child's individualized education program" (Federal Register, 1977, p.42489).

Beyond legislative mandates, philosophical and ethical movements such as the Regular Education Initiative (REI) (Will, 1986) and Supported Education (The Association for Persons with Severe Handicaps, 1989) call for total inclusion or zero reject policy in which all children with disabilities are educated with their nondisabled peers (Gartner & Lipsky, 1987; Snell, 1988; Stainback & Stainback, 1984). Will (1986) expressed concern that the current system of special education for students with mild to moderate disabilities was not effective. Will (1986) also noted that the dual program of special and regular education was redundant, costly, and gave little evidence that students with mild to moderate disabilities learned more in homogeneous, segregated classrooms compared with heterogeneous, integrated classrooms. Will (1986) proposed the following for an integrated system of special and regular education:

1. Increase instructional time.
2. Empower principals to have total building control.
3. Provide support services to regular education.
4. Use curriculum based assessment, cooperative learning, and personalized curriculum.

In addition to the REI movement, Assistant Secretary of Education Robert R. Davila (1990) cited three important goals for the future of the Office of Special Education and Rehabilitative Services. The first goal involves recognizing and awakening the potential of persons with disabilities. The second goal focuses on improving the productivity of individuals with disabilities. The third goal
involves expanding the social interaction between persons with disabilities and nondisabled individuals. This interaction should benefit not only students with disabilities but also nondisabled students by fostering social acceptance (Davila, 1990). As discussed by Stainback and Stainback (1990), the issue is no longer which setting is the least restrictive environment for a particular student, but rather how much and what type of support does a particular student need to be successful.

Block and Krebs (1992) suggested a new continuum for students with disabilities in physical education. Their model incorporates a level system utilizing peer tutors to "watch out for" or assist students with disabilities as needed in integrated physical education. The model stresses levels of support, rather than least to most restrictive environments.

Research results on the social outcomes of integration have been positive (Condon, York, Heal, & Fortschneider, 1986; Snell & Eichner, 1989; Stainback & Stainback, 1990). McEvoy, Shores, Wehby, Johnson, and Fox (1990) demonstrated that specific interventions which included: training of nondisabled peers prior to integration of students with disabilities, organizing the environment to facilitate social integration, and using specific teacher prompts and praise for social interactions enhanced the social interactions among students with and without disabilities. Specific prompts and praise techniques have also been used by peer tutors to increase the social behaviors of students with autism in integrated environments (Strain, Kerr, & Ragland, 1979).

Changes in the attitudes of nondisabled peers also have occurred as a result of integration. Kisabeth and Richardson (1985) found that after integrating a student with a disability into a racquetball class, nondisabled peers demonstrated more positive attitudes toward persons with disabilities as
measured on the Attitude Toward Disabled Persons (ATDP) scale. Stewart (1988) found similar results when two students with disabilities were integrated into a weight training class. The nondisabled peers in the integrated class demonstrated significant improvements in their attitude toward persons with disabilities as measured by the ATDP scale, when compared to nondisabled peers in a segregated class.

Integrated environments have assisted students with disabilities improve their self-concept. Karper and Martinek (1983) assessed the self-concept of students with disabilities at the beginning and end of an integrated physical education program. The students with disabilities initially had a lower self-concept than their nondisabled peers. However, at the conclusion of the study, there were no significant differences between the groups.

Integration has also been an effective means of decreasing inappropriate play behaviors and inappropriate targeted behaviors of students with autism in physical education (Schleien, Heyne, & Berken, 1988). Through the reduction of inappropriate play and targeted behaviors, students were able to develop motor proficiency in catching and striking skills (Schleien et al., 1988). Although information is available on the social outcomes of integration, little is known about the amount of motor skill learning that takes place in integrated settings.

One way to measure student learning is through the use of systematic observation techniques. Two commonly used criterion process variables which provide direct evidence of student learning are Academic Learning Time-Physical Education (ALT-PE) (Siedentop, Tousignant, & Parker, 1982) and Opportunity to Respond-Physical Education (OTR-PE) (Brown, 1989). Siedentop (1991) notes that "these variables can be thought of as proxy variables for achievement, or they can be considered direct measures of student learning" (p. 58). Both ALT-PE and OTR-PE are indicative of successful
student motor engagement (Siedentop, 1991). ALT-PE examines the amount of time a student is appropriately and successfully engaged in relevant physical education content (Siedentop et al., 1982), while OTR-PE examines the frequency of appropriate discrete motor skill responses (Brown, 1989). The response may be either acceptable or unacceptable based on the topographical (i.e. form) criteria of the skill, and successful or unsuccessful based on the consequence (i.e. outcome) of the response. No response occurs when the subject chooses not to respond, emits avoidance behavior, escapes behavior, or is out of position and unable to respond (Brown, 1989).

Although ALT has been shown to be a high predictor of student achievement in classroom settings (Rosenshine, 1979), the results for ALT-PE have not been as conclusive in physical education (Silverman, 1985). In addition, researchers in the behavior analysis field have found opportunity to respond to be one of the most robust variables related to student achievement (Delquadri, Greenwood, & Hall, 1979; Greenwood, Delquadri, & Hall, 1984; Hall, Delquadri, Greenwood, & Thurston, 1982). Thus, researchers in physical education are beginning to look at opportunity to respond as a more valid predictor of student achievement (Alexander, 1983).

Most research with OTR-PE has been conducted to determine if game modification increases the frequency of OTR (Brown, 1986; Davis, 1991; Lawless, 1984; Parker, 1984). Favorable results were shown between game modification and increases in OTR. Modifications to the OTR-PE model have also been advocated. Anderson (1983) suggested making the analysis more content-specific and to look not only at the quantity of motor responses but also the quality of the responses. Dugas (1984) studied the relationship of three process variables; ALT-PE, OTR-PE and criterion trials, with student
achievement. All three process variables correlated positively with student achievement, however, criterion trials produced the highest correlation.

Studies examining the relationship between ALT-PE and students with and without disabilities in integrated physical education, suggested that students with disabilities consistently had lower amounts of ALT-PE compared to their non-disabled peers (Knowles, Aufderheide, & McKenzie, 1982; Silverman, Dodds, Placek, & Rife, 1984; Vogler, van der Mars, Darst, & Cusimano, 1990). In addition, Vogler, van der Mars, Cusimano, and Darst (1992) found students with disabilities to be significantly less motor appropriately engaged and more off-task than their nondisabled peers, regardless of the levels of experience or expertise exhibited by teachers. This presents a problem in instructional programming for students with disabilities in integrated settings. Students with disabilities need more time to be motor appropriately engaged, not less. Grosse (1991) contends that students with disabilities who are integrated into regular physical education classes often do not have adequate support services to ensure success. Class sizes are usually too large, there tends to be a lack of appropriate equipment, and students with disabilities are frequently overlooked.

One way to ameliorate this problem is to provide additional support services to teachers and students. Examples of support services include teacher assistants, paraprofessionals, and peer tutors (Toppings, 1991). Peer tutors are by far the most economical and readily available of the three. Peer tutoring opportunities benefit the students who are being tutored and the tutors as well. Peer tutoring improves performance in the tutored subject area of both tutor and tutee (Toppings, 1991).

Little research, however, is available on the use of peer tutors to improve motor performance in physical education. DePaepe (1985) studied the content
motor-ALT of students with disabilities in three environments. The environments included a self-contained adapted physical education class, a mainstreamed physical education class, and a class with 1:1 peer tutors. The peer tutor class yielded significantly more content motor-ALT during a static and dynamic balance task than the self-contained or mainstreamed physical education classes respectively. Webster (1987) examined the effect of peer tutors on the ALT-PE of students with disabilities in adapted physical education classes. She also examined the effect of untrained versus trained peer tutors. The results indicated that peer tutors had a positive effect on increasing the ALT-PE of the subjects, but, that there was no difference between the untrained and trained peer tutors.

Toppings (1991) reported on the effectiveness of tutor training programs and found that no particular training program was superior to any other program. Toppings (1991) noted, however, that the research findings must be viewed carefully because of the wide variation in the definition of what constitutes training. Some programs included 10 minutes of training prior to each lesson while others utilized a 10 session training module as part of the tutors' curriculum. With regard to untrained versus trained peer tutors the results were also mixed. Some studies found the training to produce significant behavior changes, while others found no difference between the two. Toppings (1991) concluded that, although unstructured tutoring programs can produce gains, students in these programs are likely to progress at a slower rate and have a lower success rate. He also concluded that the peer tutor training program should include some of the following components in order to allow the peers to be more effective tutors: "how to present a task, how to give clear explanations, how to demonstrate certain tasks and skills, how to prompt or lead pupils into imitating those skills, how to check on tutee performance, how to give
feedback on performance, how to identify consistent patterns of error or problems in tutee responses, and how to develop more intensive remedial procedures for those patterns of error" (Toppings, 1991, pp. 45-46).

As students with disabilities are integrated into regular physical education classes the need for support services increases. Peer tutors may be a valuable resource in assisting students with disabilities to successfully enter the mainstream. One way to measure the impact of peer tutors on improving the motor performance of students with disabilities is through the use of the systematic observation technique OTR-PE.

**Statement of the Problem**

The use of the systematic observation technique OTR-PE, is a valuable means of measuring the motor appropriateness of discrete motor skill responses. However, no studies have examined the OTR-PE of students with developmental disabilities in integrated physical education classes nor the effect of peer tutors on improving the motor performance of students with disabilities in integrated physical education classes. With regard to information concerning the effect of untrained versus trained peer tutors in physical education, the results are inconclusive.

**Purpose of the Study**

The purpose of this study was to investigate the effect of untrained and trained peer tutors on improving the motor performance of students with developmental disabilities in integrated physical education classes. This study examined: (1) the impact of peer tutors on improving the motor performance of students with developmental disabilities; and (2) the effect of training on the
ability of peer tutors to produce gains in the motor performance of students with developmental disabilities.

**Research Questions**

Two research questions were posed in this study.

1. Can peer tutors enhance the motor performance of students with developmental disabilities in integrated physical education classes?
2. Will trained peer tutors be more effective at enhancing the motor performance of students with developmental disabilities than untrained peer tutors?

**Operational Definitions**

**Developmental Disabilities:**
"Disabilities resulting in malformation during the developmental process that restrict the physical or mental capabilities of children" (Anshel et al., 1991, p. 44).

**Discrete Motor Skill:**
"Motor task with a clearly defined beginning point and a clearly defined end point" (Anshel et al., 1991, p. 46).

**Event Recording:**
"Frequency or tally count of the occurrence of behavior" (van der Mars, 1989, p. 50).

**Mental Retardation:**
Individuals who have significantly subaverage intelligence and maladaptive behavior, which was evident during the developmental period (Luckasson et al., 1992).
**Motor Appropriate Response:**
A skill is performed that includes validated critical elements of that skill.

**Opportunity to Respond:**
The interaction between teacher formulated instructional antecedent stimuli and student success in establishing the academic response desired or implied by the materials (Greenwood et al., 1984).

**Opportunity to Respond-Physical Education:**
Subjects are in a position to emit a discrete skill response. The response is either acceptable or unacceptable and successful or unsuccessful (Brown, 1989). For the purposes of this study, the topographical appropriateness (i.e. form) rather than the outcome was investigated.

**Peer-tutoring:**
"Individualized instruction provided by peers, as aides or assistants, to individuals who require special assistance for learning or completing a task" (Anshel et al., 1991, p.110).

**Topographical Analysis:**
"System of assessing the properties of a measurement scale that remain invariant despite transformations of scale. Often applied to movement in order to study the kinematic properties of a movement that remain invariant despite transformations of scale such as speeding up or slowing down" (Anshel et al., 1991, p. 153).

**Trained Peer Tutors:**
Peers receive instruction on how to provide appropriate teaching techniques which include: cueing, feedback, and task analysis.

**Untrained Peer Tutors:**
Peers receive limited information on assisting the subjects. They are told to follow the teacher's instructions and help the subject as needed.
Assumptions

The following assumptions were made in this study:

1. The subjects in the study were representative of other subjects with developmental disabilities.
2. The teacher in the study was representative of other physical education teachers.
3. The peers in the study were representative of other peers.
4. The video camera did not alter the actions of the subjects, peers or teacher involved in the study.
5. The presence of the investigator did not alter the actions of the subjects, peers or teacher in the study.
6. The observation sessions were representative of the physical education classes conducted throughout the year.
7. The skills observed were representative of discrete motor skills taught in elementary physical education classes.

Delimitations

The study was delimited to the following:

1. The subjects were six students with developmental disabilities.
2. The subjects ranged in age from 9 to 11 years.
3. The subjects were enrolled in integrated physical education classes.
4. The peers were six non disabled students in the 4th and 5th grade.
5. The peers ranged in age from 9 to 11 years.
6. The subjects and peers were from one school in the Pacific Northwest.
7. Observations were made on discrete motor skill responses.
Limitations

The following limitations may have affected the findings of this study:

1. The sample size was relatively small.
2. The sample was from one school within the Corvallis, Oregon School District.
3. Previous and current motor experiences of the subjects were not controlled.
CHAPTER 2

REVIEW OF LITERATURE

The following chapter presents a review of literature on the effectiveness of peer tutors in both special education and physical education. In addition, research related to opportunity to respond, as defined in the behavior analysis literature, is discussed. Finally, a review of literature on process indicators of student achievement in physical education is presented.

Peer Tutors

Historical Background

The use of peer tutors in education can be traced to as early as the 1700's. Andrew Bell, in 1789 instituted the first systematic tutoring program. His original intent was for peer tutors to assist teachers in implementing innovative teaching techniques. However, Bell discovered that the tutor system was more innovative than any of his other ideas (Toppings, 1991). In 1801, Joseph Lancaster modified Bell's system by focusing more on structured curriculum materials rather than achievement level. The Bell-Lancaster system gradually faded but peer tutoring programs were revised again in the 1960's (Toppings, 1991). Programs such as, "Homework Helpers", "Youth Tutoring Youth", and the "Tutorial Community" demonstrated the widespread benefits of tutoring programs.

Homework Helpers, a New York City based program, began in 1963. High school and college students were hired to assist elementary school children in disadvantaged areas with homework, study skills, and work habits. In 1967, the "Youth Tutoring Youth" program was developed in Newark, New
Jersey and Philadelphia, Pennsylvania. This project targeted 14 and 15 year old underachievers to serve as paid cross-age peer tutors for elementary school children from disadvantaged areas. An increase in reading achievement was demonstrated not only in the tutees, but also in the tutors. In addition, the tutors developed more confidence, and attended school more regularly. The tutees also improved in confidence and showed better classroom behavior (Toppings, 1991). Melaragno and Newmark (1968) were responsible for developing the Tutorial Community. The Tutorial Community utilized the whole school district. Young children were tutored by older children, either from the same school or from the middle school. Eventually it grew so that all classes were either providing or receiving tutors. The peers served as mediators of instruction, while teachers acted as managers of instruction rather than direct instructors (Toppings, 1991). Such a large scale project gradually faded to a much more restrictive tutoring program.

Peer Tutors in Special Education

As students with disabilities integrate into regular schools and regular education classes, the need for support services increases. Peer tutoring programs have been shown to be an effective way of assisting students with disabilities to have successful educational experiences. The following presents a review of studies that utilized peer tutors to assist students with disabilities successfully integrate into the mainstream.

Classwide peer tutoring, a program in which peers supervise their classmate's responses, was used in oral reading to increase the opportunities to respond of students with learning disabilities. Students read to each other for 10 minutes each day. The tutor listened to the reader, identified errors, and made corrections. Points were awarded by the tutor for correct reading. Teachers monitored the activity and behaviors of the students, and awarded
bonus points for good tutoring. The results of this study demonstrated that during the intervention phase using peer tutors, increases in reading ability occurred. Substantial improvements were evident in oral passage reading with higher correct rates and lower error rates (Greenwood et al., 1984).

Maheady, Sacca, and Harper (1988) utilized the classwide peer tutoring program to assist high school students with mild disabilities (learning disabilities, behavior disorders and mild mental retardation) to improve their test scores in social studies. As a result of the classwide peer tutoring program, nondisabled peers in the study improved their social studies test scores by 21 percentage points on average, while the students with disabilities improved their test scores by 23 percentage points. At the conclusion of the study, the number of students receiving "A" grades rose approximately 60% while the number of "E" or failing grades was virtually eliminated. None of the students with disabilities received a grade lower than "C".

A modification of the classwide tutoring program was developed by Maheady, Sacca, and Harper (1987). This system, known as Classwide Student Tutoring Teams (CSTT), combined the systematic instructional strategies of classwide peer tutoring (contingent point earnings, immediate error correction) with the format of Teams-Games-Tournament (team assignment procedures, game format) (DeVries & Slavin, 1978). The results of this study demonstrated that both students with and without disabilities increased their math test scores approximately 20 percentage points on weekly math exams resulting in improved final grades. No failing grades were given during the CSTT intervention period.

Additional support for the effect of peer tutors on assisting students with learning disabilities to improve their math proficiency was demonstrated by Beirne-Smith (1991). Students with learning disabilities who received
instruction by trained peer tutors produced significant gains in math scores as compared to students in a control group who did not have the assistance of trained peer tutors.

Trained peer tutors have also been effective at teaching functional skills to students with autism. Blew, Schwartz, and Luce (1985) reported that the intervention of trained peer tutors was effective at assisting students with autism improve their community skills (i.e., purchasing a snack, checking out a book from the library), when compared to the modeling only intervention. Similarly, Whorton, Locke, Delquadri, and Hall (1984) found that nondisabled peer tutors were able to teach students with autism skills in oral reading, expressive language, and money skill activities.

Chin-Perez and colleagues (1986) described a program in which students with severe disabilities were assisted by peer tutors to integrate into a variety of classes. The school utilized a total inclusion model; there were no special education classes. The researchers examined the effect of peer tutors on increasing social contacts between students with disabilities and nondisabled students. Three subjects with moderate mental retardation were chosen to participate in the study. Three peer tutors also were chosen to identify targeted behaviors and, with the assistance of professionals, to develop and implement the intervention program. The peers worked with the subjects during lunch and recess. The targeted behaviors were identified as social initiations, social receptions, and negative responses. Two of the three subjects improved their social behaviors and reduced their negative responses as a result of the social skills training program.

In another study, the effects of two peer models, peer tutoring interventions and social/leisure interventions, were compared to determine which was more effective in facilitating integration (Haring, Breen, Pitts-Conway,
Peer tutoring interventions were designed to teach nondisabled students to use systematic instructional procedures to teach social and life skills to peers who had disabilities. Peer tutoring programs incorporated strategies such as cueing, prompting, error correction, and reinforcement. Social/leisure interaction interventions encouraged more friendship-based relationships by providing activities that were enjoyed by both parties, including activities such as listening to music or watching a sporting event. Voeltz (1980; 1982) argued that peer tutoring programs inherently set up power differences between the tutors and the tutees, which may inhibit friendship development, positive social interactions, and positive attitudes. Voeltz (1980; 1982) found significant gains in attitudes among students who acted as "special friends" in the social/leisure interaction program. In comparing the two models, however, Haring et al. (1987) found no statistically significant difference between the groups. Both groups produced significantly longer interactions with students with disabilities than the control group. Thus, peers who interacted with students with disabilities, either as a peer tutor or as a special friend, developed more positive attitudes toward students with disabilities than those students with limited exposure to students with disabilities.

Studies involving preschool children as peer tutors have demonstrated that preschoolers can assist students with disabilities enhance their language and social skills. Goldstein (1993) taught nondisabled preschool peers to use communication strategies to enhance the language development of socially withdrawn classmates. The strategies included establishing eye contact, describing the play action, initiating joint play, and repeating, expanding, or requesting clarification of utterances made by the child with disabilities. The results indicated that "although peers needed to be prompted to use the newly
learned strategies initially, they maintained their strategy use even when teachers reduced their rate of prompting. Furthermore, preschoolers with disabilities were equally responsive to strategy used by their peers regardless of whether the teacher prompted the peer" (Goldstein, 1993, p.39).

The use of incidental teaching was studied to determine its effect on reciprocal interactions of children with autism in an integrated preschool. Incidental teaching "consists of a pre-specified chain of child-teacher interactions" (McGee, Almeida, Sulzer-Azaroff, & Feldman, 1992, p. 117). The results indicated that peer incidental teaching was effective in promoting reciprocal interactions among the children.

**Peer Tutors in Physical Education**

The most notable peer tutoring program in adapted physical education is the PEOPEL (Physical Education Opportunity Program for Exceptional Learners) program (Long, Irmer, Burkett, Glasenapp, & Odenkirk, 1980). PEOPEL was developed to assist high school students with disabilities have successful experiences in adapted physical education by providing individualized instruction by trained peer tutors (Long et al., 1980). The adapted physical education classes incorporated a model known as reverse mainstreaming, where nondisabled peer tutors assisted students with disabilities in self-contained adapted physical education classes. Peer tutors participated in an extensive training program prior to working with the students with disabilities. The training program instructed the peers in the following: "(1) the goals and objectives of the program, (2) the roles and responsibilities of student aides, (3) introduction to exceptionalities that might be present in the physical education classes, (4) explanations of materials, and (5) practical experiences with exceptional individuals on campus and in the community"
"The PEOPEL program has been proven to be cost effective and exportable" (Long et al., 1980, p. 28).

Other studies utilizing peer tutors to assist students with disabilities in physical education have reported positive results. Halle, Gabler-Halle, and Bemben (1989) demonstrated that peer tutors were effective at assisting students with moderate to severe disabilities increase their aerobic fitness levels in physical education. The peers provided individual attention and reinforced appropriate behaviors. Through social validation, it was also determined that the subjects in the study enjoyed the program but the peer tutors appeared to be more enthusiastic.

DePaepe (1985) investigated which of three least restrictive physical education environments generated the greatest opportunity for students with moderate mental retardation to practice on-task motor skill behavior. The environments included peer-tutor (P-T), self-contained (S-C), and specific mainstream (S-M). A total of 30 subjects with moderate mental retardation were divided equally into the three environments. The ten subjects in the specific mainstream class were divided into four classes, with three subjects in two of the classes and two subjects in the other two classes. The peer-tutors were matched 1:1 and assisted the subjects to move through a student-paced balance task. On-task behavior was defined as the amount of time the subject engaged in motor appropriate activity. The results of this study revealed that the P-T group had significantly superior on-task behavior than the S-C or S-M groups. In addition, the S-C group had greater on-task behavior than the S-M group, suggesting that students who are mainstreamed could benefit from the use of peer tutors.

Webster (1987) examined the influence of peer tutors on the ALT-PE of students with moderate to severe disabilities in adapted physical education.
Using a multiple baseline-across subjects and a withdrawal design, she was able to investigate the effects of untrained versus trained peer tutors. All three subjects increased their ALT-PE motor-appropriate behavior from baseline to Phase II of the intervention (untrained peer tutors). Two of the subjects further increased their ALT-PE from Phase II to Phase III (trained peer tutors). One subject however, regressed during the Phase III portion of the intervention. Thus, the investigator concluded that there was no difference between untrained and trained peer tutors.

Schleien et al., (1988) examined the effectiveness of reducing inappropriate play behaviors and targeted behaviors of children with autism in integrated physical education. Peer tutors were shown a slide show entitled "Special Friends" (Voeltz, 1980) which served to sensitize the peers to students with special needs. The study examined five levels of social play: (a) isolate, (b) parallel, (c) cooperative/competitive dyad, (d) cooperative/competitive group, and (e) team play. Two age groups were studied, a younger group and an older group. The results demonstrated that there was a reduction in inappropriate play behaviors and targeted behaviors in all levels except team play for the younger group. The older group demonstrated a decrease in inappropriate play behaviors and targeted behaviors in all levels except isolate and cooperative/competitive dyad, indicating that peer tutors were effective in decreasing inappropriate behaviors.

Opportunity to Respond

Researchers at the Juniper Garden's Children's Project, located in Kansas City, Kansas, studied the eco-behavioral interactions of students who were disadvantaged, at-risk, or disabled, to ascertain what may cause school failure and alternatively, school success (Greenwood et al., 1984). Non-
behavioral explanations of why students fail to learn is often attributed to learning disabilities, socio-economic factors and lack of motivation. These explanations attribute the failure to the student rather than the instructional environment and learning opportunities provided (Greenwood et al., 1984).

Research efforts were undertaken to find ways to remediate and prevent the high incidence of academic failure and educational retardation associated with inner city poverty areas (Hall, Delquadri, & Harris, 1977). The first effort examined the effect of systematic reinforcement for appropriate behaviors. Increases in language skill, academic performance, appropriate home behavior, appropriate classroom behavior, and decreases in disruptive behavior were demonstrated. Although systematic reinforcement provided some important gains, the researchers felt that it was only part of the solution to reduce academic failure and educational retardation (Hall et al., 1977).

Hall et al. (1977) conducted numerous studies to assess the eco-behavioral interactions of the instructional environment and opportunities to respond. They found that first grade students were only receiving 20 seconds per day of directed reading instruction and less than five seconds of arithmetic instruction (Hall et al., 1977). In another study, which assessed instructional structure and academic response time, similar findings were reported. Twelve subjects from six inner-city classrooms, grades 1-4, were examined. It was shown that while 75% of the day was devoted to instruction, only 25% of the day was spent in active responding (Hall et al., 1982). The findings were explained as follows: (a) instructing teachers to provide frequent opportunities for students to respond was not a priority in teacher training programs, (b) high rates of academic responding by students may be punishing to teachers, (c) school constraints such as "covering the whole curriculum" inhibit adequate student
responding, and (d) a general lack of attention to productive classroom ecological arrangements often results in low response levels (Hall et al., 1982).

As a result of the findings of Hall et al., (1977), the use of opportunity to respond as a measure of student achievement was investigated. Opportunity to respond has been defined as the interaction between teacher formulated instructional antecedent stimuli (the materials presented, prompts, questions asked, signals to respond etc.) and success in establishing the academic responding desired or implied by the materials (Greenwood et al., 1984). Opportunity to respond implies the use of instructional tactics that involve presenting, questioning, and correcting so that all students have made the desired response. The first component of opportunity to respond is the environmental antecedent. The second component is the student response. Opportunity is confirmed by the academic behavior produced (Greenwood et al., 1984). Another criterion of opportunity to respond is that the response must be active. Examples of active responding include oral reading and answering questions, as opposed to passive responding which includes listening to a lecture and waiting for help (Greenwood et al., 1984).

In order to confirm variations in opportunities to respond of advantaged versus disadvantaged students, researchers have examined differences in students' academic responding in school, differences in instructional practices, and the relationship between opportunity to respond and academic achievement. Results revealed that advantaged subjects (non-Title 1) had statistically more time per day (11-14 minutes) of academic responding over disadvantaged subjects (Title 1) (Greenwood et al., 1981; Stanley & Greenwood, 1983).

Follow-up studies by Greenwood et al. (1984) examined the effects of increasing opportunity to respond by manipulating the instructional strategy with
the use of peers, without compromising the curriculum. Classwide peer tutoring was developed to provide all students with individual instruction and is described as a reciprocal approach to tutoring in which peers supervise their classmate's responses (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986). As a result, each student can receive at least 10 minutes of direct practice time on a key instructional skill. Delquadri et al. (1986) noted: "it is not unusual for children to increase their academic behavior from 20% to 70% during classwide peer tutoring" (p. 536). Numerous studies have utilized classwide peer tutoring to improve performance in various academic areas (Maheady & Harper, 1987; Cook, Heron, & Heward, 1983). Classwide peer tutoring was used to increase spelling achievement. The effects of no allocation-no opportunity, allocation with low opportunity, and allocation with high opportunity were compared. In the first condition, no allocation-no opportunity, the subjects were tested on 20 spelling words in which they received no instruction. The second condition, allocation with low opportunity, included instruction by the teacher. The final condition, allocation with high opportunity, utilized the classwide tutoring program in which the students spelled to each other for 10 minutes per day. Results of the study supported the conclusion that classwide peer tutoring was a viable option for increasing opportunity to respond, thereby increasing academic achievement (Greenwood et al., 1984).

**Process Indicators of Student Achievement in Physical Education**

Much of the research on process indicators of student achievement in physical education has focused on using ALT-PE (Siedentop et al., 1982) as an indicator of student learning. As explained earlier, ALT-PE refers to the amount of time a student is engaged in activities that are appropriate to his/her ability resulting in a high success rate and low error rate (Siedentop et al., 1982). It
has been proposed, however, that discrete motor skills that can be measured may be a more appropriate measure of student achievement because a detailed response-by-response analysis of the process and product of the behavior can be analyzed (Alexander, 1983). The work of Dugas (1984) supports this contention. Dugas (1984) examined the relationship of three process variables; ALT-PE, OTR and criterion trials, on two measures of student achievement; knowledge and performance of students in an archery class. She found that all three process variables correlated positively with student achievement; however, the process variable that most highly correlated with student achievement was criterion trials. Silverman (1985) also found criterion trials to be a high predictor of student achievement. Silverman (1985) studied the relationship between three different measures of student engagement which included; motor, cognitive and total time engaged, and practice trials which included; whole or partial trials, on student achievement in a swimming skill. He found whole appropriate practice trials to be a positive predictor of achievement and whole inappropriate practice trials to be a negative predictor of achievement. In addition, it was determined that the number and appropriateness of the practice trials were more important predictors of student achievement than engagement time.

Various studies have examined the effect of game modifications on ALT-PE and OTR-PE. Parker (1984) modified the games of volleyball and softball in order to examine the effect of game modification on the nature and extent of skill involvement of elementary school children in physical education. Data were maintained on the amount of time spent in game play, the number of opportunities the student had to respond using a specific skill, and the appropriateness of the response. Baseline data revealed that the response rate of students in game situations was generally less than one response per
minute. Although game modifications did not significantly increase the appropriateness or successfulness of responses, it was observed that the total number of responses increased through game modification.

Another study examined the effect of volleyball game modifications on students' OTR-PE and ALT-PE (Lawless, 1984). Modifications included the use of four different balls -- regular volleyball, plastic ball, nerf ball, and #4 volleyball, and four different rule conditions -- regulation rules, one bounce allowed, 2 hits required, and 2 hits required/one bounce allowed. The ALT-PE data indicated that the plastic, nerf, and regular balls had significantly higher appropriate ALT-PE percentages than the #4 volleyball. OTR-PE results indicated that the plastic and regular ball had significantly higher successful and acceptable response rates than the #4 volleyball. The plastic, nerf, and regular balls had differentially higher unsuccessful response rates than the #4 volleyball. Rule modifications did not result in any significant differences for either ALT-PE or OTR-PE.

Brown (1986) examined the effects of volleyball and soccer game modifications on OTR-PE and ALT-PE of fifth graders in physical education. The volleyball game modifications involved reductions in team and court sizes. These modifications consisted of 1/2 the class per team (1-game), six per team (2-games), five per team (3-games), and four per team (4-games). The soccer modifications involved assigning players to field zones, which included no-zones, end-zones, side-zones, and 1/4 zones. The ALT-PE data for volleyball showed that 3-game modification produced slightly more ALT-PE motor engaged time, and the 1-game modification produced significantly less ALT-PE motor engaged time when the modifications were compared. The OTR-PE for volleyball showed that the 1-game modification produced significantly less
acceptable and successful responses. No significant differences were found with soccer game modifications for both ALT-PE and OTR-PE.

Another study which examined the effect of volleyball game modification on students' OTR-PE was conducted by Davis, (1991). The modifications included size of court, height of net, type of ball, and modified serve. In the first study, the number of players varied and consisted of 1 v 1, 2 v 2, 3 v 3, and 6 v 6. The second study involved the sequencing of skill emphasis with a progression of four sequenced, skill related, modified games. The results of the first study indicated that 1 v 1 produced substantial effects on increasing the number and appropriateness of OTR-PE. Although not significant, the 2 v 2, and 3 v 3 produced greater amounts of OTR-PE than the 6 v 6 condition. The results of the second study revealed a significant drop in the number and successfulness of OTR-PE using regulation serves over modified serves. OTR-PE rates were highest in the pass game, followed by the pass/bump games, the bump games, and then the regulation serve games.

Summary

This chapter provided a review of literature on peer tutors as well as process variables related to student achievement. The process variables reviewed in this chapter included ALT-PE, OTR-PE, and criterion trials. Research indicates that these process variables correlate highly with student achievement (Dugas, 1984). Greenwood et al. (1984) suggest that OTR is the best predictor of student achievement. Classwide peer tutoring programs have been shown to be an effective way of increasing students' opportunities to respond (Greenwood et al., 1984). Other studies have examined the effects of game modifications on the ALT-PE and OTR-PE of students in physical education (Brown, 1986; Davis, 1991; Lawless, 1984; Parker, 1984). Results
indicated a positive relationship between game modifications and ALT-PE and OTR-PE.

The use of peer tutors in education has a long history dating back to as early as the 1700’s. Landmark programs such as “Homework Helpers”, “Youth Tutoring Youth”, and the “Tutorial Community” have demonstrated the benefits of peer tutoring programs. The use of peer tutors to assist students with special needs has proven to be beneficial in various subject areas such as spelling, reading, math, social studies, and physical education. In addition, peer tutors have assisted students with special needs increase their social interactions and reduce or eliminate inappropriate behaviors.

Limited research exists on the difference between untrained versus trained peer tutors in physical education. Webster (1987) found no significant difference between the groups. However, as Toppings (1991) notes, although unstructured tutoring programs can produce gains, they are likely to progress at a slower rate, and have a lower success rate. Thus, the purpose of this study was to investigate the effect of untrained versus trained peer tutors on the motor performance of students with developmental disabilities in integrated physical education classes.
CHAPTER 3

METHODS AND PROCEDURES

The methods and procedures used in this study are presented as follows: (a) selection of subjects, (b) instruments, (c) apparatus, (d) procedures, (e) experimental design, (f) data collection, and (g) analysis of data.

Selection of Subjects

Subjects were selected from the Corvallis, Oregon 509J School District. This district was selected because of its location and the District's willingness to participate in the study. Subjects were chosen from the intermediate developmental disabilities class by the researcher in cooperation with the District's intermediate special education teacher. Six students, five males and one female, with developmental cognitive and motor delays, ages 9 to 11 years, were selected. All subjects had mental retardation as classified by the American Association on Mental Deficiencies (Luckasson et al., 1992). Two of the five male subjects had Prader-Willi syndrome, and the female subject had Down syndrome. The cause of the mental retardation for the other three subjects was unknown.

Six non-disabled peers, four females and two males were chosen by their physical education and classroom teachers to serve as tutors. The tutors were chosen based on the following criteria: good behavior in physical education class, high skill level ability as indicated by the physical education teacher, and a desire to be in the study. The peer tutors were selected from the 4th and 5th grade and ranged in age from 9 to 11 years. There is no evidence to suggest that children must be tutored by same-sex peers (Toppings, 1991); therefore, the peer tutors were randomly assigned to subjects.
Subjects received physical education every other day as determined by the district schedule. School holidays and absenteeism interfered minimally with the physical education sessions. Each subject participated in a different physical education class. Peers were randomly matched with a subject and attended that subject's physical education class.

In order to conduct this study, approval by the Institutional Review Board at Oregon State University was needed. Appendix A contains the Human Subjects Approval form. In addition, parental permission of all participants was obtained. The parents were provided with the necessary informed consent information. Parents agreed to the terms of the study and signed the informed consent form. See Appendix B and C for a copy of the informed consent forms for parents of subjects and peers respectively.

**Instruments**

**OTR-PE Coding Device**

The systematic observation coding device used in this study was a modification of the OTR-PE instrument. Opportunity to respond was first developed in the field of applied behavior analysis and is most notably associated with the Juniper Gardens Children's Project at the University of Kansas (Hall et al., 1977). Wilson (1976) studied frequency of opportunities to respond in physical education and was followed by others (Brown, 1986; Davis, 1991; Dugas, 1984; Evans, 1982; Lawless, 1984; Parker, 1984). Brown (1986) coined the term Opportunity to Respond-Physical Education (OTR-PE). In this model, data are collected on the number (frequency) of times a subject responds successfully/appropriately in physical education. This system allows the researcher to determine the number of opportunities the subject has to
respond, the topographical appropriateness of the response, and the functional effects of the response (Brown, 1986).

For the purpose of this study, the OTR-PE coding form was modified to collect data on the motor appropriateness of each discrete motor skill response exhibited by the subjects. The functional effects of the response (i.e., successful or unsuccessful) were not a focus of this study.

The discrete motor skills analyzed in this study included the horizontal jump, catch, overhand throw, forehand strike, and side-arm strike. These skills coincided with the skills being taught in the physical education classes. Subjects were not at the mature stage of development in any of the discrete motor skills chosen; therefore, improvements in these skills was possible. The components of the discrete motor skills were broken down into five critical elements. These critical elements formed the basis of determining the percentage of motor appropriateness of each discrete motor skill response. Each critical element was equal to 20 percent; thus, the subject could achieve a maximum mean percentage of motor appropriateness of 100 percent for each discrete motor skill response. The topographical criteria (i.e., skill components) were adapted and modified from the I CAN Fundamental Motor Skills Curriculum (Wessel, 1976). Project I CAN is a nationally validated program which is disseminated through the National Diffusion Network, U.S. Department of Education (Wessel, Holland, & Traux, 1987). Modifications were made to insure that each discrete motor skill contained five critical elements. Appendix D contains the original I CAN assessment forms. The critical elements for each discrete motor skill were modified as follows:

**Horizontal Jump**

1. Preparatory movement includes knees flexed and arms extended behind the body
2. Arms thrust and legs extend at take-off in a forward and upward direction
3. Take off at 45° angle
4. Feet contact the floor ahead of the body mass
5. Thighs near parallel to the floor and arms move forward during landing

Catch
1. Hands in front of the body
2. Elbows flexed
3. Extend arms in preparation for ball contact
4. Contact the ball with hands only
5. Elbows bend to absorb force

Overhand Throw
1. Side orientation
2. Almost complete extension of throwing arm
3. Weight transfers to the foot opposite the throwing arm
4. Hip and spine rotate
5. Follow-through well beyond ball release and toward the desired direction of travel

Forehand Strike
1. Hand is behind shoulder prior to strike
2. Side orientation to the direction of travel
3. Hip and spine rotate during preliminary motion, swing, and follow-through
4. Weight transfers from back foot during preliminary motion; to the front foot during strike
5. Follow-through well beyond point of contact
Side-arm Strike

1. Dominant hand grips the bat (palm up) above nondominant hand (palm down); side orientation
2. Bat is held behind dominant shoulder
3. Hip and spine rotate during swing and follow through
4. Weight transfers from back foot to front foot during swing
5. Follow-through well beyond point of contact.

A copy of each OTR-PE coding sheet, is included in Appendix E.

Apparatus

A Panasonic Video Tape Recorder model AG-HT4 and Scotch Performance Grade Video Cassette T-120 videotapes were used to record the behaviors of the students. A wireless microphone was worn by peer tutors. The microphone was capable of recording the peer tutors' voices directly onto the videotape. In addition, a character generator was placed on the video tape recorder allowing the researcher to record the time each response occurred.

Procedures

Peer tutors were chosen by their classroom and physical education teachers. The peers chosen were asked if they would like to participate in a physical education study in which they would assist a student with a disability in physical education class. The peers were told that they needed to help the student with disabilities and to follow the physical education teachers directions. Peers who agreed to these terms participated in the study and were considered to be untrained peer tutors.

Subjects were previously assigned to a separate integrated physical education class. Subjects were not in the same physical education class.
tutors attended the subjects' assigned physical education class, in addition to their regular physical education class. The physical education teacher followed the Dynamic Physical Education Curriculum (Pangrazi & Dauer, 1992) which included a warm-up, fitness activity, lesson focus, and game. Each subject was video taped the entire class (30 minutes); however, only data on the lesson focus were collected and analyzed for this study. The lesson focus consisted of instruction in discrete motor skills which included horizontal jump, catch, overhand throw, forehand strike or side-arm strike.

The video camera was placed on the stage in the gymnasium and the video camera operator taped the student and peer during physical education class. During the lesson focus, the camera followed the subject to determine the appropriateness of the motor skill response. Data also were collected on the verbal responses of the peer tutors via the wireless microphone. This allowed the researcher to determine if the tutor training program was being implemented.

**Intervention**

The following describes the peer tutor training program. Each peer tutor was trained using the same format by the researcher. Information on three specific teaching areas was addressed during training. These areas included: cueing, feedback, and task analysis of motor skills. The cueing techniques followed the system of least prompts and included verbal cueing, modeling and physical assistance. Feedback information consisted of positive general reinforcement and positive specific reinforcement. The critical elements of the motor skills taught to the peer tutors included the horizontal jump, catch, overhand throw, forehand strike, and side-arm strike. Peer tutors were provided with hand-outs defining these behaviors as well as a script of scenarios which utilized these techniques. Copies of these handouts are included in
Appendix F.

Peer tutors received two 30 minute sessions of training during their regularly scheduled physical education classes. Each peer tutor was trained individually. All training sessions were audio taped. Peer tutors individually practiced the teaching and feedback scenarios by role playing with the researcher. A criterion for mastery required the tutor to implement these techniques successfully with the researcher a minimum of 4 out 5 times for each discrete motor skill. In addition, to determine the acquisition of knowledge, tutors completed an exam at the conclusion of the second day of training on information presented to them during training. A pre-determined criterion grade of 90% or better was deemed acceptable. The scores ranged from 90% to 100% with a mean of 93.3%. A copy of the exam is included in Appendix G.

Finally, data were collected on the tutors' ability to implement the teaching and feedback techniques. This allowed the researcher to verify implementation of the intervention.

Experimental Design

Research involving subjects with disabilities often does not lend itself well to group design. Subjects are often heterogeneous and small in number (Watkinson & Wasson, 1984). Single subject designs allow subjects to serve as their own control, thus reducing threats to validity by careful timing of the treatment program (Heward, 1987). Watkinson and Wasson (1984) note: "A good design for studies investigating the effects of an instructional program is the multiple baseline design" (p. 24). The multiple baseline design is a "highly flexible technique that enables a researcher to analyze the effects of an independent variable across multiple behaviors, settings, and/or subjects without the necessity of withdrawing the treatment variable in order to reverse
improvements in behavior" (Heward, 1987, p.195). There are three types of multiple baseline designs, multiple baseline across behaviors, across settings and across subjects. This study employed the multiple baseline design across subjects in which the same intervention (peer tutoring) was applied to different subjects. The initiation of the intervention was systematically delayed across subjects.

The components of baseline logic include prediction, verification, and replication (Heward, 1987). In the first, prediction, it is assumed that the dependent variable would not change significantly if it were to continue to be measured under the same condition. It is recommended that baseline data be maintained until stability is reached (Baer, Wolf, & Risley, 1968). However, as Kazdin (1978) points out, if the response rate is zero, or extremely low in sophistication, the dependent variable can be assumed to be stable and baselines of three to four sessions would be sufficient. In order to verify the predicted behavior, little or no change must be observed in the ongoing data patterns of the other behaviors that are still exposed to the conditions under which the prediction was made (Heward, 1987). Verification increases the likelihood that the baseline would have remained unchanged if the independent variable had not been introduced (Heward, 1987). Replication involves repeating the previously observed change with applications of the independent variable to additional subjects. Replicating the experiment accomplishes two goals. First, it reduces the possibility that a variable other than the independent variable was responsible for the change in the dependent variable, and second, it suggests that the targeted behavior is changeable (Johnston & Pennypacker, 1980). If the baseline remains stable until the intervention occurs, an experimental effect is assumed to have occurred (Kazdin, 1978; Kratochwill, 1978). The major advantage to this design is that it
controls for threats to internal validity, especially history (Kazdin & Kopel, 1975). Heward (1987) described an experimental tactic known as a delayed multiple baseline design. After the initial baseline and intervention are begun, subsequent baselines and interventions are added in a staggered or delayed fashion.

This study utilized the delayed multiple baseline design across subjects. Each subject received physical education in a separate class. The first three subjects experienced three conditions. Condition A, baseline, examined the subjects' motor performance without the assistance of peer tutors. Condition B examined the subjects' motor performance with the assistance of untrained peer tutors, and Condition C examined the subjects' motor performance with the assistance of trained peer tutors. The remaining three subjects participated in two conditions, Condition A (baseline) and Condition C (trained peer tutoring).

**Data Collection**

Data were collected on all subjects over a period of 36 days. Table 1 presents the timeline for data collection. Subject 1 began the experiment on day 1 and was followed by subject 2 on day 4, followed by subject 3 on day 8. Intervention of Condition B began on subjects 1, 2, and 3 on days 7, 10, and 14 respectively, followed by intervention of Condition C on days 15, 18, and 24 respectively. Subjects 1, 2, and 3 concluded participation in the study on days 25, 28, and 32 respectively. The remaining three subjects participated in Conditions A and C. Subjects 4, 5, and 6 began the study on days 16, 19, and 22 respectively, followed by intervention of Condition C on days 24, 27, and 28 respectively. Subjects 4, 5, and 6 concluded participation in the study on days 32, 35, and 36 respectively.
Table 1
Data Collection Timeline (Days)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Baseline</th>
<th>Untrained</th>
<th>Trained</th>
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<td>1</td>
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<td>27</td>
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<tr>
<td>6</td>
<td>22</td>
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<td>28</td>
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</tbody>
</table>

Analysis of Data

Data on all subjects were captured via the video tape recorder during the lesson focus of the physical education class. An analysis of the subjects' opportunities to respond revealed their mean percentage of motor appropriateness for each session. Mean percentage of motor appropriateness for each session was then graphed for each subject. Visual analysis was used to inspect and interpret data paths. Visual analysis determined, first, if changes were apparent in the data patterns and, second, if the changes corresponded with the experimental manipulation of the intervention. In order to answer these questions, changes within and between experimental conditions were analyzed. The analysis consisted of noting variability and trends within conditions, and changes in levels and overlap between conditions. Variability refers to dissimilarity of scores within a condition and trend refers to the direction (i.e., stable, upward or downward) of the data within conditions (Wolery & Harris, 1982). Level is defined as "the relative value of the data pattern on the dependent variable. Changes in level represent changes in value of the data series as measured on the dependent variable at the point of intervention" (Wolery and Harris 1982, p. 447). Overlap refers to the degree to which data from the intervention phase fall within the range of data from the
baseline phase. The less overlap, the smaller the variability, the greater the change in level; the stronger the experimental control. Through visual analysis, the effect of untrained and trained peer tutors on improving the motor performance of subjects with developmental disabilities in integrated physical education classes was determined.
CHAPTER 4

RESULTS AND DISCUSSION

The purpose of this study was to determine the effect of untrained and trained peer tutors on enhancing the motor performance of students with developmental disabilities in integrated physical education classes. Chapter 4 presents the effects of the intervention of untrained and trained peer tutors on the motor performance of students with developmental disabilities in integrated physical education classes. The following sections are included in this chapter: (a) reliability, (b) subject analysis, (c) fidelity of intervention of peer tutors, (d) discussion, and (e) summary.

Reliability

Subjects were videotaped to obtain a visual record of their discrete motor skill responses. A character generator placed on the video camera displayed a running time of the physical education lesson. During the lesson focus, each trial was recorded to the nearest second on a specially designed OTR-PE data sheet. Each trial was then analyzed by the researcher based on the five critical elements of the discrete motor skill. Each critical element received a value of 20 percent, thus, the highest percent possible was 100 percent. The subjects' mean percentage of appropriateness was then determined based on the average of all trials.

Interobserver agreement was determined using the formula agreements/agreements + disagreements X 100 (van der Mars, 1989). Twenty percent, as recommended by Cooper, Heron, and Heward (1987), of the sessions were randomly analyzed by a trained second observer. The observer performed a trial by element comparison of the data. A reliability score above
90% was deemed acceptable. The range of interobserver agreement was from 90 to 100% with a mean of 95.7%. In situations where the observers disagreed, the videotapes were played back and accuracy was determined and resolved on the original data sheet. The data with resolutions were used for all additional analyses. Appendix H contains the data on reliability.

**Subject Analysis**

Subjects 1, 2, and 3 participated in Protocol 1. Protocol 1 consisted of three conditions: baseline, untrained peer tutoring, and trained peer tutoring. Based on the findings on these three subjects, Protocol 2 was employed with subjects 4, 5, and 6. Protocol 2 consisted of two conditions: baseline and trained peer tutoring. Data were analyzed using visual analysis which consisted of determining variability and trends within conditions, and levels and overlap between conditions.

Each motor skill was broken down into five critical elements each worth 20 percent. The total mean percent possible was 100 percent. Appendix I contains the mean percentage of motor appropriateness scores for each session in each condition for subjects 1, 2, and 3, and Appendix J contains the mean percentage of motor appropriateness scores for each session in each condition for subjects 4, 5, and 6.

Figure 1 presents a graph of the delayed multiple baseline design for subjects 1, 2, and 3 as well as data on mean percentage of motor appropriateness scores for each session in each condition.
Figure 1
Mean percent motor appropriate scores for each session in each condition
Protocol 1

Subject 1

Subject 1, a 10 year old male with Prader-Willi syndrome and mental retardation, was well behaved but, as frequently noted with persons with this disability, demonstrated inappropriate behaviors at times. These behaviors consisted of an unwillingness to participate in physical education, inappropriate verbal statements, and returning to his homeroom without requesting permission. The peer tutor randomly assigned to this subject was a female, age 9 years.

The motor skills which comprised this subject's physical education curriculum during the period of this study included: forehand strike, overhand throw, horizontal jump, and catch. Subject 1 participated in three sessions of Condition A (baseline), three sessions of Condition B (untrained), and four sessions of Condition C (trained).

As noted in Figure 1, a stable trend with no variability was evident within baseline. A downward trend with minimal variability appeared in Condition B. Late overlap (Day # 11) and no change in level occurred between Conditions B and A. Thus, the untrained peer tutor was ineffective at enhancing the motor performance of this subject. However, in Condition C a distinct change in level between conditions occurred. The data remained relatively stable with a slight upward trend as a result of the last session. Additionally, there was no overlap between Conditions C and B. Variability remained low in this condition. The results of Condition C revealed that training the peer tutor proved to be beneficial because after training, there was a discernible improvement in subject 1's motor performance.
Subject 2

Subject 2 was a 10 year old female with Down Syndrome. Although generally amiable, this subject at times exhibited inappropriate behaviors. These behaviors included: yelling, pushing, and other inappropriate verbal statements. The peer tutor randomly assigned to this subject was a female, age 10 years.

The motor skills which comprised this subject's physical education curriculum during the period of this study included: forehand strike, overhand throw, horizontal jump, side-arm strike, and catch. Subject 2 participated in three sessions of Condition A (baseline), three sessions of Condition B (untrained) and four sessions of Condition C (trained).

As noted in Figure 1, a stable trend with little variability was evident within baseline. In Condition B there was a slight upward, but basically stable trend with limited variability present. A great deal of overlap appeared between Conditions B and A, thus there was no change in level. In Condition C, a stable trend with minimal variability appeared. Overlap between conditions occurred and only a slight change in level was apparent. Thus, neither the untrained nor the trained peer tutor produced gains in this subject's motor performance.

Subject 3

Subject 3 was an 11 year old male with mental retardation and Attention Deficit Disorder (ADD). Subject 3 was compliant throughout the study but, as is common with students with ADD, was easily distracted. The peer tutor assigned to subject 3 was a female, age 11 years.

The motor skills which comprised subject 3's physical education curriculum during the period of this study included: overhand throw, horizontal jump, and catch. Subject 3 participated in three sessions of Condition A
(baseline), four sessions of Condition B (untrained) and four sessions of Condition C (trained).

As noted in Figure 1, a slight downward but relatively stable trend appeared during baseline. Variability remained low in this condition. A downward trend with increased variability was present in Condition B. Almost complete overlap was evident between Conditions B and A, thus, no change in level occurred between baseline and the untrained peer tutoring condition. A slight downward trend with minimal variability appeared in Condition C. A definite increase in level with no overlap occurred during this condition. The results of the data demonstrate that the untrained peer tutor was not successful at improving subject 3's motor performance. However, after intervention with the trained peer tutor, substantial gains in motor performance were evident.

A review of subjects 1, 2, and 3's mean percentage of motor appropriateness scores in each condition and mean percentage of improvement between conditions is presented in Table 2. Subject 1's overall mean percent motor appropriateness score was 3 percent in baseline. An increase to 14 percent with a 367 percent improvement appeared in Condition B. The greatest increase however, was demonstrated in Condition C, as the subject improved to 36 percent and achieved an 1100 percent improvement. Subject 2 had an overall mean percent motor appropriate score of 17 percent in baseline. In Condition B subject 2's mean percent motor appropriate score fell to 13 percent with a 24 percent decrease in improvement. This was followed, however, by an increase in Condition C, to an overall mean of 23 percent and an improvement of 35 percent. Subject 3's overall mean percent motor appropriate score was 16 percent in baseline. A slight increase was demonstrated in Condition B as the subject improved his mean to 19 percent with a 19 percent improvement. The greatest improvement, however, was
demonstrated in Condition C as the subject increased his mean percent to 57 with a 256 percent improvement.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Baseline Mean (%)</th>
<th>Untrained Mean (%)</th>
<th>Trained Mean (%)</th>
<th>(% Improvement)</th>
<th>(% Improvement)</th>
<th>(% Improvement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.3</td>
<td>14.2</td>
<td>36.3</td>
<td>(367)</td>
<td>(1100)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16.6</td>
<td>12.7</td>
<td>22.9</td>
<td>(-24)</td>
<td>(35)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>19</td>
<td>57</td>
<td>(19)</td>
<td>(256)</td>
<td></td>
</tr>
</tbody>
</table>

The results of Protocol 1 revealed that untrained peer tutors were not successful at improving the motor performance of the subjects. However, trained peer tutors produced gains in subjects 1 and 3's motor performance. As a result of these findings, Protocol 2, which consisted of only baseline and intervention of trained peer tutors, was utilized to replicate and provide additional support for the effect of trained peer tutors. Figure 2 presents a graph of the delayed multiple baseline design for subjects 4, 5, and 6, as well as data on mean percentage of motor appropriateness scores for each session in each condition.
Figure 2

Mean percent motor appropriate scores for each session in each condition.
**Protocol 2**

**Subject 4**

Subject 4 was a 9 year old male with mental retardation. This subject was also hearing impaired and had limited verbal skills. Subject 4 was cooperative throughout the study. The peer tutor randomly assigned to this subject was a 10 year old male.

The motor skills which comprised subject 4's physical education curriculum during the period of this study included: horizontal jump, catch, overhand throw, and side-arm strike. Subject 4 participated in four sessions of Condition A (baseline) and five sessions of Condition C (trained).

As noted in Figure 2, a stable trend was evident within baseline. Although overlap initially appeared in Condition C, an upward trend became apparent. A plausible explanation for the overlap could be attributed to the peer's need to adjust to the role of a peer tutor. An increase in level after adjustment was revealed. Variability remained low within each condition. Thus, the data suggest that the trained peer tutor was successful at improving subject 4's motor performance.

**Subject 5**

Subject 5 was a 10 year old male with Prader-Willi syndrome and mental retardation. Subject 5 was generally well behaved but tended to become tense at times. When this occurred the subject was given time to sit down and relax. The peer tutor randomly assigned to this subject was an 11 year old female.

The motor skills which comprised subject 5's physical education curriculum during the period of this study included: horizontal jump, overhand throw, and catch. Subject 5 participated in four sessions of Condition A (baseline) and five sessions of Condition C (trained).
As noted in Figure 2, a slight upward but relatively stable trend with limited variability was evident during baseline. A stable trend with low variability appeared in Condition C. A distinct increase in level with no overlap between conditions was demonstrated in Condition C. The results of this subject's data further support the use of trained peer tutors as a viable means of improving the motor performance of students with developmental disabilities in physical education. Significant gains were made from Condition A to Condition C for this subject.

Subject 6

Subject 6 was a 9 year old male with mental retardation and no verbal communication. The subject communicated with modified signs and gestures. The subject was small and frail and had poor balance. This subject was cooperative throughout the study but, was easily distracted. The peer tutor randomly assigned to subject 6 was a 10 year old male.

The motor skills which comprised subject 6's physical education curriculum during the period of this study included: catch, overhand throw, and side-arm strike. Subject 6 participated in three sessions of Condition A (baseline) and five sessions of Condition C (trained).

As noted in Figure 2, a stable trend with limited variability was evident during baseline. A slight upward trend with increased variability appeared in Condition C. However, there was no overlap between conditions and an increase in level between conditions was apparent. Subject 6 also supported the previous findings that students with developmental disabilities could improve their motor performance when assisted by trained peer tutors.

A review of subjects 4, 5, and 6's mean percentage of motor appropriateness scores in each condition and mean percentage of improvement between conditions is presented in Table 3. Subject 4's overall
mean percentage of motor appropriateness score was 12 percent during baseline. An increase of 42 percent with a 250 percent improvement occurred in Condition C. Subject 5's overall mean percentage of motor appropriateness score was 18 percent during baseline. Subject 5 increased his overall mean percentage of appropriateness score to 54 percent with a 200 percent improvement. Finally, subject 6 scored a mean percentage of motor appropriateness of 18 percent during baseline. In Condition C, subject 6 increased his overall mean to 38 percent with a 56 percent improvement.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Mean Percent Motor Appropriate In Each Condition and Mean Percent Improvement Between Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Baseline Mean (% Improvement)</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
</tr>
</tbody>
</table>

The results of Protocol 2 further support the use of trained peer tutors as a viable method to assist students with disabilities improve their motor performance in integrated physical education classes.
Fidelity of Intervention of Peer Tutors

The major emphasis of this study was to determine the effect untrained and trained peer tutors had on increasing the motor performance of subjects with developmental disabilities in integrated physical education classes. In order to determine whether trained peer tutors actually implemented the tutoring program, a wireless microphone was worn by the tutors throughout the study. The microphone captured all verbal statements made by the tutors prior to and after training for peers 1, 2, and 3, and after training for peers 4, 5, and 6. In addition, the video camera captured any physical assistance or models provided by the peer tutors. A record of each peer tutor's teaching behaviors is included in Appendices K through P.

A summary of the effect of the peer tutor training program for each peer tutor is presented. Peer 1 increased her verbal cues and provided appropriate modeling techniques from Condition B to Condition C. In addition, she increased both positive general and positive specific feedback statements from Condition B to Condition C. Peer 1 tended to provide corrective feedback during her modeling behaviors. This proved to be a valuable means of assisting subject 1 to improve his motor performance. Appendix K contains a script of peer 1's teaching behaviors.

Although there were no increases in the number of tutoring behaviors demonstrated by peer 2, the quality of her tutoring behaviors improved. For example, prior to training the peer tutor instructed the subject to "jump" but did not provide clarifying information on how to perform the jump. After training the peer incorporated more clarifying information such as "bend your knees" or "arms back". Appendix L contains a script of peer 2's teaching behaviors.

Similar findings were noted in the behaviors of peer 3. Although no increases in the overall number of teaching behaviors occurred, the quality of
the tutor's teaching behavior improved. As was noted with the teaching behaviors of peer 2, peer 3 provided more clarifying information after training, which appeared to be beneficial in improving subject 3's motor performance. Appendix M contains a script of peer 3's teaching behaviors.

No comparisons could be made between conditions for peers 4, 5, and 6. However, a description of their behaviors is presented. Peer 4 tended to give more teaching cues than feedback statements. Peer 4 incorporated clarifying statements into his cues. Thus, he was successful at implementing the training techniques. Appendix N contains the script of peer 4's teaching behaviors. Peer 5 tended to use slightly more feedback statements than cues. She was very enthusiastic and supportive of the attempts made by the subject. She often provided corrective feedback in her reinforcement statements. Appendix O contains the script of peer 5's teaching behaviors. Peer 6 was similar to peer 4. Peer 6 tended to use slightly more cues than feedback statements. He was also able to incorporate clarifying statements into his verbal cues. Appendix P contains the script of peer 6's teaching behaviors. Based on the findings of the peer tutors' teaching behaviors, it is apparent that the peer tutor training program was implemented.

**Discussion**

This study utilized a delayed multiple baseline design across subjects. The components of baseline logic include prediction, verification and replication (Heward, 1987). It was predicted that the subjects in this study would maintain a relatively low mean percentage of motor appropriateness during baseline. The delayed multiple baseline design across subjects verified this prediction. In Condition B, it was predicted that the untrained peer tutors would not produce significant improvements in the subjects mean percentage of appropriateness.
score. Again this was verified across subjects 1, 2, and 3. Finally, it was predicted that trained peer tutors could assist the subjects to produce improvements in their mean percentage of motor appropriateness score. This prediction was verified across subject's 1 and 3. Subject 2 did not verify the findings of the trained peer tutor intervention. Subject 2 exhibited a variety of reactions to the presence of the peer tutor. At times the subject was happy to see the peer tutor and would be cooperative. At other times, however, the subject would push the peer tutor away, yell at the peer tutor or run away from the peer tutor. The subject did not welcome assistance, and often, she wanted to be the leader and did not want the peer tutor to give her instructions. Because of these mixed reactions, it was challenging for the peer tutor to teach the subject.

The findings of Protocol 1, specifically subjects 1 and 3, were replicated across subjects 4, 5, and 6. These subjects again supported the prediction that the mean percentage of appropriateness score would remain low during baseline. Verification of the peer tutor training program was evident among subjects 5 and 6. While subject 4 did not demonstrate an initial increase in level following baseline, a definite improvement occurred after two sessions in Condition C. A plausible explanation for the initial overlap in Condition C may be attributed to the peer tutor needing to adjust to being a peer tutor. After those two sessions, the subject was able to maintain a relatively high percent improvement over baseline.

Based on visual analysis of the data, it was concluded that trained peer tutors were effective in assisting the subjects to improve their motor performance, while untrained peer tutors were not. Threats to internal validity were accounted for by replicating the experiment across subjects. It was clear
that changes in behavior only occurred after the intervention of trained peer
tutors had been introduced for all but one subject (subject 2).

The results of this study compared favorably with the work of DePaepe
(1985), who found that subjects with disabilities matched 1:1 with peer tutors
produced significantly more content motor-ALT than subjects with disabilities in
either a self-contained adapted physical education class or a mainstreamed
physical education class. However, the finding of this study contrasted with
Webster (1987) who reported no difference between untrained and trained peer
tutors in improving the ALT-PE of subjects with disabilities in adapted physical
education classes. Long et al. (1980) supports the use of training tutors prior to
working with students with disabilities. In the PEOPEL program, high school
students were required to enroll in a semester course (i.e., longer period of
time) of training before assisting students with disabilities in physical education.
The results of the tutor training program incorporated in this study demonstrated
that elementary age students could be taught to assist students with disabilities
to improve their motor performance, in a relatively simple manner and a shorter
amount of time.

The subjects in this study have delayed motor skills relative to their
nondisabled peers. As demonstrated, the subjects maintained a mean
percentage of motor appropriateness of approximately 20% during baseline,
with the exception of subject 1 who performed at a lower level. This means that
the subjects were only able to perform approximately one out of the five critical
elements of any of the discrete motor skills. This level of performance is quite
disturbing for it is significantly lower than the skill level of nondisabled peers.
Most nondisabled children are at the mature stage of development in
fundamental motor skills by the ages of 9 to 11 years (Gallahue, 1980). It is
clear then that students with developmental disabilities need additional support
in order to improve their motor ability and be successful in integrated physical education classes. As Grosse (1991) noted, students with disabilities who are integrated into regular physical education classes often do not have adequate support services to ensure success. The findings of this study support that contention. With the current economic situation, school districts are being forced to reduce support personnel. The use of peer tutors or volunteers can be a viable option for providing students with disabilities additional and individual support.

In reviewing the rate per minute of motor responses per subject per condition, on average, the subjects emitted 4 responses per minute during Condition A (baseline). Subjects 1, 2, and 3 emitted 7 responses per minute during Condition B (untrained) and all subjects elicited 4 responses per minute during Condition C (trained). Thus, while untrained peer tutors may have assisted subjects in Protocol 1 to elicit more motor skill responses, the quality of the motor responses was not as appropriate as the responses elicited during Condition C. Therefore, studies involving subjects with developmental disabilities should focus on the quality of motor skill responses, rather than mere frequency of motor skill responses.

As discussed previously, the tutor training program was implemented by the peers. The tutor training program consisted of teaching the peers how to present cues, how to provide reinforcement, and most importantly how to break skills down so that the subjects could understand what they needed to do. For example, cueing the subject to stand sideways prior to the overhand throw allowed the subject to be in a position to achieve an additional critical element of the skill. Such cueing behaviors delivered by tutors were more meaningful to the subjects than simply saying "throw the ball". This type of individual attention cannot be achieved in integrated physical education classes without
assistance. Often teachers must attend to classes of 30 or more students. Thus, trained peer tutors provide a viable option for assisting students with developmental disabilities improve their motor performance in integrated physical education classes.

**Summary**

The purpose of this study was to determine if untrained and trained peer tutors could enhance the motor appropriateness of subjects with developmental disabilities in integrated physical education classes. It further investigated if differences were evident between untrained and trained peer tutors. Two protocols were employed in this study. Protocol 1 consisted of three conditions, Condition A (baseline), Condition B (untrained peer tutoring) and Condition C (trained peer tutoring). Protocol 2 consisted of two conditions, Condition A (baseline) and Condition C (trained peer tutoring). Three subjects were randomly assigned to Protocol 1 and three subjects were randomly assigned to Protocol 2. Data were maintained on the motor responses exhibited by the subjects' during the lesson focus of their physical education class. An interobserver agreement reliability score of 95.7% was achieved. Instances of disagreement were played back on the video monitor and accuracy was determined and resolved on the original data sheet.

An analysis of each subject's data was presented. In Protocol 1, untrained peer tutors were not effective at improving the motor performance of the subjects; however, after training, subjects 1 and 3 increased their mean percentage of motor appropriateness scores. No effect with either the untrained or trained peer tutor occurred with subject 2. The results from Protocol 2 further supports the findings of Protocol 1. This suggests; therefore, that, trained peer
tutors enhanced the motor performance of subjects with developmental disabilities in integrated physical education classes.

Data on the behaviors of the peer tutors were also maintained. In Protocol 1, peer 1 increased the number of her tutoring behaviors from Condition B to Condition C. Although peers 2 and 3 did not increase the number of tutoring behaviors, they improved the quality of their teaching behaviors. While no comparisons between conditions could be made for the peers in Protocol 2, these peers were able to provide appropriate teaching behaviors.

As discussed earlier, the results of this study compared favorably with the work of DePaepe (1985), who found that peer tutors produced the greatest gains in the content motor-ALT of subjects with disabilities over subjects in either a self-contained adapted physical education class or a mainstreamed physical education class. The results of this study, however, contrasted with the work of Webster (1987) who found no difference between untrained and trained peer tutors in assisting students with disabilities to improve their ALT-PE.
CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was twofold: (1) to determine whether peer tutors could improve the motor performance of students with developmental disabilities in integrated physical education classes and (2) to determine whether trained peer tutors could produce greater gains in motor performance of the subjects over untrained peer tutors. This chapter includes: (a) a summary of the procedures, (b) a summary of the findings, (c) implications, and (d) recommendations for further studies.

Summary of Procedures

Six subjects, five males and one female, with developmental disabilities participated in this study. Six nondisabled students, four females and two males, served as peer tutors. Subjects and peers ranged in age from 9 to 11 years. Each peer was matched randomly with a subject and attended the subject's physical education class. Three subjects participated in Protocol 1 which consisted of three conditions. These conditions included Condition A, baseline; Condition B, assistance by an untrained peer tutor; and Condition C, assistance by a trained peer tutor. The remaining three subjects participated in Protocol 2, consisting of two conditions: Condition A, baseline; and Condition C, assistance by a trained peer tutor.

Subjects and peers were monitored via a video camera. Although the subjects were videotaped for the entire physical education lesson, data were collected only from the portion reflecting the lesson focus of the class. The lesson focus was delimited to the discrete motor skills of: horizontal jump,
overhand throw, catch, forehand strike, and side-arm strike. Data were recorded on a modified version of the OTR-PE coding sheet which incorporated motor skill sequences of Project I CAN (Wessel, 1976). OTR-PE data reflect the number (frequency) of criterion trials (i.e. appropriate) a subject makes in physical education. This system yields a frequency count, analysis of topographical appropriateness of responses and the functional effects of the responses (successful or unsuccessful) (Brown, 1986). For the purposes of this study, however, data were only collected on the topographical appropriateness of the subjects' skill trials.

The video camera was used to capture all responses made by the subjects. In addition, peer tutors wore a wireless microphone which permitted recording of their verbal tutoring behavior directly onto the videotape.

Peer tutors in Protocol 1 participated in two conditions, B and C. Peer tutors in Protocol 2 only participated in condition C. All peer tutors were trained individually by the researcher over two 30 minute sessions. Peers were trained to a predetermined criterion. Peers were successful at meeting the requirements for the tutor training program.

Data were collected on all subjects over an eight week period, using a delayed multiple baseline design (Heward, 1987). Data were analyzed through visual inspection of graphic data, which included examination of variability and trends within conditions as well as levels and overlap between conditions.

**Summary of Findings**

This study examined the quality of motor responses elicited by students with developmental disabilities in integrated physical education classes. While some studies have examined the social value of integrated physical education classes (Karper & Martinek, 1983; Kisabeth & Richardson, 1985; Schleien et al.,
1988; Stewart, 1988; Strain, et al., 1979), few studies have examined the motor performance of students with developmental disabilities in integrated physical education classes. Those that have examined motor performance utilized Academic Learning Time-Physical Education (ALT-PE). While ALT-PE can provide information on motor performance based on intervals of time, it cannot analyze each individual trial. Since all skills included in this study were discrete, short duration skills, OTR-PE provided a more valid description of the subjects' motor behaviors. In viewing these motor behaviors, it was demonstrated that during baseline, subjects with developmental disabilities who were integrated into regular physical education classes maintained a mean percentage of motor appropriate behavior of approximately 20%. This translates into the subjects' being able to perform only one of the five critical elements of any of the discrete motor skills studied. Thus, the need for additional support in integrated physical education classes was evident. A major finding of this study was that trained peer tutors could be effective at assisting students with developmental disabilities improve their motor performance, while untrained peer tutors could not. Additionally it was determined that the components of the tutor training program should include, at least, information on cueing, feedback and task analysis (skill breakdown).

The results of this study demonstrate that trained peer tutors were effective at assisting subjects with developmental disabilities improve their motor performance, while untrained peer tutors were not. In addition, the peer tutor training program appeared to be successful because of the motor gains made by the subjects and the peers' ability to provide specific information on how to perform the various skills.
Implications

When incorporating a peer tutoring program, teachers need to recognize that, although peer tutors can assist students with disabilities improve their motor performance, they cannot replace the teacher. Teachers will need to develop a system of monitoring the peer tutors' teaching behaviors, as well as the motor behaviors of the students with disabilities, to be sure that the students with disabilities are progressing. While the peer tutors in this study wore a microphone which allowed the researcher to monitor the tutors' teaching behaviors, few teachers would have the time or resources necessary to implement such a system on a daily basis. In addition, the tutors in this study were trained individually which would require additional time. Possible alternatives to this system would be to provide group training to the peer tutors. This would allow the teacher to involve more students in the tutoring program which would in turn assist more students with disabilities. Consideration should also be given to using tutors enrolled in the same class as students with disabilities. A class rotation of peer tutors would be an effective way of allowing the peers time to tutor and time to work on their own individual skills. In addition, rotating the peers would encourage the students with disabilities to generalize skills across tutors and to not become too dependent on one peer tutor.

As discussed, utilizing a peer tutor program may be one way to assist students with disabilities to integrate into regular physical education classes. While a peer tutoring program may require additional time to develop and implement, the rewards, particularly the improvement of the motor performance of students with disabilities, may well justify the efforts and expenditure of time.
Recommendations

The results of this study provide valuable information on the effect of untrained and trained peer tutors on improving the motor performance of subjects with developmental disabilities. However, the study was limited in its scope. This study utilized a single subject design; thus, the number of subjects was relatively small. In addition, the subjects in this study were elementary aged students who had developmental delays. Finally, this study focused on skill development during the lesson focus of the physical education class. The following recommendations are made for future studies.

1. This study should be replicated with other subjects who have developmental disabilities to confirm the effects of the peer tutor training program.

2. The peer tutor training program should be replicated using a group, rather than an individual training protocol for tutors.

3. This study should be replicated over a longer period of time.

4. Additional studies should examine subjects with different types and levels of disabilities such as physical or behavioral disabilities.

5. Additional studies should examine subjects of different age groups.

6. Analysis should be made on other components of the physical education curriculum such as fitness or game activities.

7. More studies should examine the quality of motor performance rather than the amount of time the subject remains on-task.
REFERENCES


Appendices
Appendix A

Human Subjects Approval
November 25, 1992

Principal Investigator:

The following project has been approved for exemption under the guidelines of Oregon State University's Committee for the Protection of Human Subjects and the U.S. Department of Health and Human Services:

Principal Investigator: John M. Dunn

Student's Name (if any): Cathy Houston-Wilson

Department: Exercise and Sport Science

Source of Funding:

Project Title: The Effect of Untrained and Trained Peer Tutors on the Opportunity to Respond (OTR) of Students with Developmental Disabilities

Comments:

A copy of this information will be provided to the Chair of the Committee for the Protection of Human Subjects. If questions arise, you may be contacted further.

Redacted for privacy

Mary E. Nunn
Sponsored Programs Officer

cc: CPHS Chair
Appendix B

Subjects' Informed Consent
Dear Parents/Guardian,

I am writing to tell you about a study that I would like to do in (student's name) physical education class. The purpose of my study is to determine the effect of peer tutors on the Opportunity to Respond (OTR) of children with special needs in physical education. OTR is a measure of the amount of time students are engaged appropriately in activity during an instructional period. It is hoped that a peer tutor will increase (student's name) OTR.

In order to determine the number of opportunities (student's name) has to participate in physical activity, he/she will first be videotaped without the assistance of the peer tutor during physical education. This will be used to establish baseline, or to get a starting point. The timeline for baseline is about three sessions, or until stability is reached. The next step will involve assigning a peer tutor to work with (student's name). The peer tutor will receive training to insure that his/her intervention with (student's name) is appropriate. The amount and type of training received by the peer tutor will be an integral part of the study. The overall timeline for the study is approximately 6 weeks. (Student's name) will be videotaped two or three times a week (depending on the weekly schedule) during his regularly scheduled physical education class.

The results of (student's name) performance will be shared with you. Confidentiality will be maintained throughout the study. Neither (student's name) first or last name will be used, he/she will receive a number which will identify him/her for the study. The videotapes will only be used to analyze OTR and will not be shared with others.

Participation in this study is voluntary. Refusal to participate will not result in penalty or loss of participation in physical education. You may withdraw (student's name) from the study at any time. There are no risks or discomfort involved in this study.

This study will be supervised by Dr. John M. Dunn. If you have any questions or concerns please contact me at 737-3402, or 929-3969. If you wish to allow (student's name) to be involved in this study, please sign the enclosed informed consent form, and return it to me in the self-addressed stamped envelop provided. Thank you for your cooperation. I look forward to working with you and (student's name).

Sincerely,

Cathy H. Wilson
Graduate Student
INFORMED CONSENT

I have read and understand the purpose of this study.

I give permission for my son/daughter

__________________________ (child's name)
to participate in the study.

__________________________ (parent/guardian signature)

__________________________ (parent/guardian signature)

Investigators 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.

Principal Investigator ___________________________ Date
John M. Dunn, Ed.D.
Administration Building
Oregon State University
Corvallis, OR 97331
#737-0732

Investigator ___________________________ Date
Cathy H. Wilson
120 Women's Building
Oregon State University
Corvallis, OR 97331
#737-3402
Appendix C

Peer Tutors' Informed Consent
Dear Parents/Guardian,

My name is Cathy Wilson and I am a doctoral student in the Movement Studies for the Disabled program at Oregon State University. I am writing to you to tell you about a study that I would like to do in physical education. The purpose of my study is to determine the effect of peer tutors on the Opportunity to Respond (OTR) of children with special needs in physical education. OTR is a measure of the amount of time students are engaged appropriately in activity during an instructional period. It is believed that peer tutors will increase the OTR of students with special needs.

(Student's name) has been chosen by his classroom and physical education teachers to be a peer tutor for this study. If you agree to allow (student's name) to participate in the study, he/she will be provided with introductory training to assist a student with special needs in physical education. This will be followed by a more intense training program in which (student's name) will learn more appropriate ways to interact with children with special needs in physical education. (Student's name) will attend the physical education class with the student he/she is tutoring, as well as his own physical education class. The overall timeline for this study is approximately 6 weeks. The children will be videotaped two or three times a week (depending on the weekly schedule) for 30 minutes.

Confidentiality will be maintained throughout this study. Neither (student's name) first or last name will be used, the children will be identified only by number. The videotapes will be used to analyze the OTR of children with special needs, and will not be shared with others.

Participation in this study is voluntary. Refusal to participate will not result in penalty or loss of participation in physical education. You may withdraw (student's name) from the study at any time. This is an observational study. There are no risks or discomfort involved in this study.

This study will be supervised by Dr. John M. Dunn. If you have any questions or concerns please contact me at 737-3402, or 929-3969. If you wish to allow (student's name) to be involved in this study, please sign the enclosed informed consent form, and return it to me in the self-addressed stamped envelop provided. Thank you for your cooperation. I look forward to working with you and (student's name).

Sincerely,

Cathy H. Wilson
Graduate Student
INFORMED CONSENT

I have read and understand the purpose of this study.

I give permission for my son/daughter

______________________________ (child’s name)
to participate in the study.

______________________________ (parent/guardian signature)

______________________________ (parent/guardian signature)

Investigators 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.

Principal Investigator
John M. Dunn, Ed.D.
Administration Building
Oregon State University
Corvallis, OR 97331
#737-0732

______________________________ Date

Investigator
Cathy H. Wilson
120 Women's Building
Oregon State University
Corvallis, OR 97331
#737-3402
Appendix D

I CAN Assessment Sheets
**I CAN**

**PERFORMANCE OBJECTIVE:**
TO DEMONSTRATE A TWO-HAND SIDEARM STRIKE

<table>
<thead>
<tr>
<th>SKILL LEVELS</th>
<th>FOCAL POINTS FOR ACTIVITY</th>
</tr>
</thead>
</table>
| 1. To demonstrate a two-hand sidearm strike with assistance. | Given a verbal request, a demonstration, and physical assistance, the student can strike a lightweight 6 inch ball suspended at waist height with a plastic bat without assistance, 2 out of 3 times, in this manner:  
   a. Bat swings at approximately waist height  
   b. Bat swings forward in a horizontal plane during strike and follow through. |
| 2. To demonstrate a two-hand sidearm strike without assistance. | Given a verbal request and a demonstration, a student with the ability to strike two-handed with assistance can strike a lightweight 6 inch ball suspended at waist height with a plastic bat without assistance, 2 out of 3 times, in this manner:  
   a. Bat swings at approximately waist height  
   b. Bat swings forward in a horizontal plane during strike and follow through  
   c. Eyes focused on ball throughout strike. |
| 3. To demonstrate a mature two-hand sidearm strike. | Given a verbal request and a demonstration, a student who can strike two-handed without assistance can strike a lightweight 6 inch ball suspended at waist height using a plastic bat with a mature two-handed sidearm strike, 2 out of 3 times, in this manner:  
   a. Dominant hand gripping bat (palm up) above nondominant hand (palm down)  
   b. Side orientation (nondominant side toward direction of travel)  
   c. Bat is held behind dominant shoulder prior to strike  
   d. Hip and spine rotation during swing and follow through  
   e. Weight transfer from back foot to front foot during swing  
   f. Follow through well beyond point of contact  
   g. Smooth (not mechanical or jerky) integration of focal points above. |
PERFORMANCE OBJECTIVE:
TO DEMONSTRATE A FUNCTIONAL ONE-HAND FOREHAND STRIKE

<table>
<thead>
<tr>
<th>SKILL LEVELS</th>
<th>FOCAL POINTS FOR ACTIVITY</th>
</tr>
</thead>
</table>
| **1.** To demonstrate a one-hand forehand strike with assistance. | Given a verbal request, a demonstration, and physical assistance the student can strike a lightweight 6-inch ball suspended at waist height without assistance, 2 out of 3 times, in this manner:  
   a. Arm swings approximately at waist height  
   b. Horizontal arm motion from behind the shoulder to past the midline of body. |
| **2.** To demonstrate a one-hand forehand strike without assistance. | Given a verbal request and a demonstration, a student with the ability to strike forehand with assistance can strike a lightweight 6-inch ball suspended at waist height using a forehand motion without assistance, 2 out of 3 times, in this manner:  
   a. Arm swings at approximately waist height  
   b. Arm swings forward in a horizontal plane during strike and follow through  
   c. Eyes focused on ball throughout stroke. |
| **3.** To demonstrate a mature one-hand forehand strike. | Given a verbal request and a demonstration, a student who can demonstrate a forehand strike without assistance can strike a lightweight 6-inch ball, suspended at approximately waist height, 2 out of 3 times, in this manner:  
   a. Hand is behind shoulder prior to strike (preliminary motion)  
   b. Side orientation to direction of travel (side opposite striking arm is forward)  
   c. Hip and spine rotation during preliminary motion, swing, and follow through  
   d. Weight transfer to back foot during preliminary motion, to the front foot during strike  
   e. Follow through well beyond point of contact  
   f. Smooth (not mechanical or jerky) integration of focal points above. |
| **4.** To move into position and strike with a one-hand forehand pattern. | Given a verbal request and a demonstration, the student can move into position on visual cue and strike the ball using a mature one-hand forehand strike, 2 out of 3 times, in this manner:  
   Contact ball so that it travels (or would travel if not suspended) over a net 4 feet high placed 15 feet away and lands in a specified target area. |
PERFORMANCE OBJECTIVE:
TO DEMONSTRATE A FUNCTIONAL OVERHAND THROW

<table>
<thead>
<tr>
<th>SKILL LEVELS</th>
<th>FOCAL POINTS FOR ACTIVITY</th>
</tr>
</thead>
</table>
| 1. To demonstate an overhand throw with assistance. | Given a verbal request, a demonstration, and physical assistance, a student with the ability to grasp a ball can throw a 3-4 inch ball for a distance of at least 10 feet, 2 out of 3 times, without resistance in this manner:  
a. Overhand motion in the direction of the throw (hand passes above shoulder)  
b. Release the ball in the anticipated direction of the throw. |
| 2. To demonstrate an overhand throw without assistance. | Given a verbal request and a demonstration of the mature overhand throw, a student with the ability to perform the overhand throw with assistance can throw a 3-4 inch ball to a 20-inch wide target placed 15 feet away, 2 out of 3 times in this manner:  
a. Eyes focused on the target  
b. Throwing arm motion includes the hand passing above the shoulder.  |
| 3. To demonstrate a mature overhand throw. | Given a verbal request and a demonstration, a student with the ability to perform the overhand throw can throw a 3-4 inch ball, 2 out of 3 times in this manner:  
a. Almost complete extension of the throwing arm to initiate windup for the throwing action (assuming a side orientation prior to the throw)  
b. Weight transfer to the foot opposite the throwing arm  
c. Hip and spine rotation (1/4 rotation) in preparation for and during the throwing action  
d. Follow through well beyond ball release and toward the desired direction of travel  
e. Smooth (not mechanical or jerky) integration of four previous points. |
### PERFORMANCE OBJECTIVE:
TO DEMONSTRATE A FUNCTIONAL CATCH

#### I CAN

<table>
<thead>
<tr>
<th>SKILL LEVELS</th>
<th>FOCAL POINTS FOR ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To catch with assistance.</td>
<td>Given a verbal request, a demonstration, and physical assistance, the student can catch or trap, with hands or arms and chest, an 8 to 12 inch ball lofted directly into his arms from a distance of 3 to 5 feet. The student can maintain control of the ball 2 out of 3 times without resistance.</td>
</tr>
<tr>
<td>2. To catch without assistance.</td>
<td>Given a verbal request, a demonstration, and the ability to catch with assistance, the student can catch (grasp or trap with hands or arms and chest) an 8 to 12 inch ball lofted softly to the middle of the chest from a 6 foot distance. The student can do this 2 out of 3 times in this manner:</td>
</tr>
<tr>
<td>a. Eyes focused on ball, adjusting the arm position to receive the ball on cue from watching the ball's path</td>
<td></td>
</tr>
<tr>
<td>b. Trap or catch ball with hands or arms and chest.</td>
<td></td>
</tr>
<tr>
<td>3. To demonstrate a mature catch.</td>
<td>Given a verbal request, a demonstration, and ability to catch without assistance, the student can catch a 6 inch playground ball tossed to chest height 1.10 feet at a 15 foot distance 2 out of 3 times in this manner:</td>
</tr>
<tr>
<td>a. Hands in front of the body, elbows flexed near sides in preparatory position</td>
<td></td>
</tr>
<tr>
<td>b. Extension of the arms in preparation for ball contact</td>
<td></td>
</tr>
<tr>
<td>c. Contact the ball with hands only (fingers spread and slightly flexed with palms facing)</td>
<td></td>
</tr>
<tr>
<td>d. Elbows bend as arms absorb the force of the ball</td>
<td></td>
</tr>
<tr>
<td>e. Smooth (not mechanical or jerky) integration of four previous points.</td>
<td></td>
</tr>
<tr>
<td>4. To move into position and catch.</td>
<td>Given a verbal request, a mature catching pattern, and a demonstration, the student can catch 2 out of 3 times a 4 to 6 inch ball projected at least 10 feet high from a distance of at least 20 feet to a point within 5 feet of the student. Student moves into position to receive the ball on cue from watching the ball's path.</td>
</tr>
</tbody>
</table>
**PERFORMANCE OBJECTIVE:**
TO DEMONSTRATE A FUNCTIONAL HORIZONTAL JUMP

<table>
<thead>
<tr>
<th>SKILL LEVELS</th>
<th>FOCAL POINTS FOR ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. To jump horizontally with a mature pattern.</td>
<td>Given a verbal request and a demonstration, a student who can jump horizontally without assistance can jump horizontally from a standing position, two out of three times, in this manner:</td>
</tr>
<tr>
<td>a.</td>
<td>a. Preparatory movement includes 90° (±20°) flexion of both knees with arms extended behind the body</td>
</tr>
<tr>
<td>b. c.</td>
<td>b. Forceful thrust of both arms and full extension of the legs at take-off in a forward and upward direction</td>
</tr>
<tr>
<td>d. e. f.</td>
<td>c. Take-off angle (from take-off spot through center of body mass) at 45° (±5°)</td>
</tr>
<tr>
<td>4. To demonstrate a mature horizontal jump for distance.</td>
<td>d. Feet make contact with the floor ahead of the body mass</td>
</tr>
<tr>
<td></td>
<td>e. Thighs near parallel to the floor at touch-down</td>
</tr>
<tr>
<td></td>
<td>f. Simultaneous forward arm action during landing</td>
</tr>
<tr>
<td></td>
<td>g. Integration of six points listed above.</td>
</tr>
<tr>
<td></td>
<td>Given a verbal request and a demonstration, the student can jump horizontally from a standing position with a mature pattern for a distance of at least two-thirds of his or her standing body height.</td>
</tr>
</tbody>
</table>
Appendix E

Opportunity to Respond Coding Forms
### OPPORTUNITY TO RESPOND CODING FORM (SIDEARM STRIKE)

<table>
<thead>
<tr>
<th>Time</th>
<th>Two hand grip</th>
<th>Bat behind</th>
<th>Hip-Spine Rotation</th>
<th>Weight Transfer</th>
<th>Follow Through Percent Appropriate</th>
<th>Peer Tutor Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Peer Untrained</th>
<th>Trained</th>
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</table>

<table>
<thead>
<tr>
<th>Mean %</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
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</table>
# Opportunity to Respond Coding Form (Forehand Strike)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Session Mean% Tape SD Counter.</th>
<th>Peer: Untrained Trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
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</table>

<table>
<thead>
<tr>
<th>Hand behind</th>
<th>Side</th>
<th>Hip/Spine</th>
<th>Weight</th>
<th>Follow</th>
<th>Percent</th>
<th>Peer Tutor Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side</td>
<td></td>
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<td></td>
<td></td>
<td>Verbal</td>
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<tr>
<td>Arm</td>
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<td></td>
<td>Model/Verbal</td>
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<tr>
<td>Shoulder</td>
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<td></td>
<td></td>
<td>Phys Assist</td>
</tr>
<tr>
<td>Rotation</td>
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<td></td>
<td>Pos General</td>
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<tr>
<td>Transfer</td>
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<td>Pos Specific</td>
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<th>Time</th>
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<th>10</th>
<th>15</th>
<th>20</th>
<th>Total Freq</th>
<th>Mean %</th>
<th>SD</th>
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</table>

Total frequency: | 0 |
Mean %: | 0 |
SD: | 0 |
### OPPORTUNITY TO RESPOND CODING FORM (OVERHAND THROW)

<table>
<thead>
<tr>
<th>Time</th>
<th>Side Arm Extension</th>
<th>Weight trans</th>
<th>Hip/Spine Rotation</th>
<th>Follow Through</th>
<th>Percent Appropriate</th>
<th>Peer Tutor Behavior</th>
</tr>
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<td>Total Freq</td>
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</tbody>
</table>

**Peer:**
- Untrained
- Trained

**Peer Tutor Behavior**
- Verbal
- Model Verbal
- Phys Assist
- Pos General
- Pos Specific
OPPORTUNITY TO RESPOND CODING FORM (CATCH)

<table>
<thead>
<tr>
<th>Time</th>
<th>Hands front of body</th>
<th>Elbows Flexed</th>
<th>Extend Arms</th>
<th>Contact ball with hands</th>
<th>Elbows bend</th>
<th>Percent</th>
<th>Appropriate</th>
</tr>
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<tbody>
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</table>

Total Freq

Mean %

SD

Foot:
Untrained
Trained

Peer Tutor Behavior
Verb
Modal/Verbal
Phys Assist
Pos General
Pos Specific
### Opportunity to Respond Coding Form (Horizontal Jump)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date</th>
<th>Session</th>
<th>Mean%</th>
<th>Tape</th>
<th>Counter</th>
<th>Peer</th>
<th>Untrained</th>
<th>Trained</th>
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<tbody>
<tr>
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<td>Peer</td>
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</table>

<table>
<thead>
<tr>
<th>Knee Flexed</th>
<th>Arm Thrust</th>
<th>Take Off</th>
<th>Feet Contact</th>
<th>Thighs Paral</th>
<th>Arms Forward</th>
<th>Percent Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tine</td>
<td>Arms Behind</td>
<td>Legs Extend</td>
<td>45°</td>
<td>Ahead Body</td>
<td>Arms Forward</td>
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</table>

#### Peer Tutor Behavior

- Verbal
- Model/Verbal
- Phys Assist
- Pos General
- Pos Specific
Appendix F

Tutor Training Hand-out
Tutor Training Handout

**Verbal Cue**

A signal or sign to tell someone what to do.

Examples:

"John, throw the ball."
"Jane, it's your turn to bat."
"Let's stand on the black circle."
"Stand next to this cone and kick the ball."

**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 throw the ball like this."
"You need to swing level, like this."
"Watch me, kick the ball to the wall."
"When the rope comes over, jump, 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.

Examples:

Stand behind the student and physically assist with the arm motion of a throw.
Stand sideways in front of a student holding hands, bend knees, and jump over the rope.
Stand behind the student and physically assist with the swing of a bat.
Feedback

Positive General Feedback

A supportive statement about the student's motor skill response.

Examples:

"Good throw!"
"Nice kick!"
"Good job!"
"Super!"

Positive Specific Feedback

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

Examples:

"Good job stepping with your opposite foot when you threw the ball."
"That's the way to bend your knees when you jump."
"I like the way you used your hands to catch the ball."
"Nice strike, you kept your elbows up."

Skills

Jump

knees bent, arms behind
arms move forward, legs extend
feet contact the floor first ahead of the body

Catch

hands held in front of the body, elbows bent
arms extend to catch ball with hands

Strike

body turned sideways
hand behind the shoulder
step with the opposite foot of the striking arm
follow through

Throw

body turned sideways, arm extended behind
step with the opposite foot of the throwing arm
follow through
Examples of scenarios:

**Scenario 1**
Tutor: Cue: “Mary, strike the ball.”
Subject: acceptable response
Tutor: Positive Specific Reinforcement:
    “Good job striking the ball, you made it over the net.”

**Scenario 2**
Tutor: Cue: “John, throw the ball.”
Subject: unacceptable response
Tutor: Positive General Feedback: “Good try.”
Tutor: Repeat Cue and Model: “John, throw the ball like this.”
Subject: acceptable response
Tutor: Positive Specific Reinforcement:
    “Nice job, I like the way you stepped when you threw the ball.”

**Scenario 3**
Tutor: Cue: “Jane, jump over the rope.”
Subject: unacceptable response
Tutor: Repeat Cue and Model: “Jane, jump like this.”
Subject: unacceptable response
Tutor: Questions the subject: “Can I help you.”
Tutor: Provides Physical Assistance:
    Tutor and subject hold hands, bend knees and jump together.
Subject: acceptable response
Tutor: Positive Specific Reinforcement:
    “That’s the way to bend your knees, but next time try to jump by yourself.”
Appendix G

Peer Tutor Quiz
Peer Tutor Quiz

Name_________________________ Date_________________________

Choose the correct answer

positive specific feedback       physical assistance
verbal cue                      positive general feedback
model

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 ________________ for the student.

3. You should only give __________________________ to the student if the verbal cue and model 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 that does not give exact information about what was good about a skill is called

   ________________________________________________.
Circle the correct answer.

6. An example of a positive specific feedback statement is:
   a. "Good job."
   b. "Good job throwing the ball, I liked the way you stepped with your opposite foot."
   c. "Good try."
   d. "Throw the ball like this."

7. The student you are working with is unable to catch the ball, a verbal cue you may give to help the student catch the ball better is:
   a. "Hold your arms out and catch the ball with your hands."
   b. "Catch the ball."
   c. "Try again."
   d. "You'll 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 hit the ball, you say:
   a. "Is it O.K. if I help you?" and if the student agrees, stand behind the student and assist with the swing of the bat
   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'll get it."

10. "Good job throwing" is an example of a:
    a. positive specific feedback statement.
    b. corrective feedback statement.
    c. verbal cue.
    d. positive general feedback statement.
Appendix H

Reliability
Reliability

Mean percentage of interobserver agreement (20%)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Session</th>
<th>Score</th>
<th>Session</th>
<th>Score</th>
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<tbody>
<tr>
<td>Subject 1</td>
<td>6</td>
<td>97.6</td>
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<td>Subject 6</td>
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Overall Mean Percentage of Agreement

95.7
Appendix I

Mean Percent Motor Appropriate Scores (Protocol 1)
### Mean Percent Motor Appropriate Scores
For Each Session In Each Condition

#### Subject 1

<table>
<thead>
<tr>
<th>Session</th>
<th>Baseline</th>
<th>Untrained</th>
<th>Trained</th>
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<tbody>
<tr>
<td>1. forehand strike</td>
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<td></td>
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<td>2. forehand strike</td>
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<td></td>
</tr>
<tr>
<td>3. overhand throw</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. overhand throw</td>
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<td>20</td>
<td></td>
</tr>
<tr>
<td>5. overhand throw</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>6. horizontal jump</td>
<td></td>
<td>2.7</td>
<td></td>
</tr>
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<td>7. horizontal jump</td>
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<td>9. catch</td>
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<td>30</td>
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<tr>
<td>10. overhand throw</td>
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<td></td>
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#### Subject 2

<table>
<thead>
<tr>
<th>Session</th>
<th>Baseline</th>
<th>Untrained</th>
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<td>2. forehand strike</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. overhand throw</td>
<td>11.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. horizontal jump</td>
<td></td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>5. horizontal jump</td>
<td></td>
<td>15.8</td>
<td></td>
</tr>
<tr>
<td>6. horizontal jump</td>
<td></td>
<td>18.8</td>
<td></td>
</tr>
<tr>
<td>7. sidearm strike</td>
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<td>8. horizontal jump</td>
<td></td>
<td></td>
<td>15.7</td>
</tr>
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<td>9. catch</td>
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**Subject 3**

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<tr>
<td>2. Horizontal jump</td>
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<td>3. Horizontal jump</td>
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<td>5. Catch</td>
<td>34.7</td>
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<td>6. Horizontal jump</td>
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<td>7. Horizontal jump</td>
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<td>8. Catch</td>
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<td>11. Overhand throw</td>
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Appendix J

Mean Percent Motor Appropriate Scores (Protocol 2)
### Mean Percent Motor Appropriate Scores
**For Each Session In Each Condition**

#### Subject 4

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<thead>
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<th>Sessions</th>
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<td>2. catch</td>
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<td></td>
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<td>4. horizontal jump</td>
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<td>7. catch</td>
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<td>62.3</td>
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<tr>
<td>8. catch</td>
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<td>57.7</td>
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#### Subject 6

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<td>1. catch</td>
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<tr>
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<td>20</td>
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<tr>
<td>3. overhand throw</td>
<td>18.8</td>
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<td>4. catch</td>
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<td>25.4</td>
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<td>5. catch</td>
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<td>43</td>
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<td>6. catch</td>
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<td>7. catch</td>
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<td>8. sidearm strike</td>
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<td>39</td>
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</table>
Appendix K

Peer 1 Teaching Behaviors
Peer 1 Teaching Behaviors

Session 4 untrained

G That's good, 1
G Wow, good throw, 1, good throw, 1
G Wow, good job
G Good job, 1
G Good job
G Oh, you almost caught it
G Wow you're good, 1
G Good job, 1
G Have you been taking lessons
G Woh
G You're really a good thrower
G Woh

Verbal = 0  Model = 0  PA = 0  General = 8  Specific = 0

Session 5 untrained

Verbal = 0  Model = 0  PA = 0  General = 0  Specific = 0

Session 6 untrained

V Jump them
G Good
M 1,1, come this way
V Can you jump that, yeah
G Yeah
M Go like this, and go this way
V Can you jump that, yeah
G Yeah
M Come around this way now
V OK, go
V Now come around this way

Verbal = 3  Model = 1  PA = 0  General = 3  Specific = 0

Session 7 trained

V Try that, 1
G Yeah
M Put your hands back, and when you jump up use your feet for pressure
G Yeah
M But you need to bend your legs too, I forgot to tell you that,
bend your knees and jump forward
M Try and jump forward more though, try and jump forward
M  Try bending your knees though, 
bend your knees, put your arms back, and push up
V  Need to go a little bit further though, OK, try it one more time
G  Yeah
M  Can you try and push your arms up and go forward more
M  You have to go forward a little more
M  1, can you jump a little forward more, can you try that, 
you know how you try and jump forward, push your body forward, 
can you try it
G  Good
V  OK, 1, try it again OK
M  OK, 1, put your feet on the line, bend down, put your arms back 
and push up with your arms and jump and try to move forward 
get your feet to move forward
G  Yeah, see, try it again
G  Good job 1
V  Try it again keep on doing it
G  You're getting even better
G  Yeah
V  Try again
V  Jump as far as you can
G  Yeah
V  Jump one more time
G  Yeah
M  Ready, try it, go, see, you almost jump as far as I do
M  Bend your knees down, remember, ready, set, go, 
see I went too far forward that time
V  Do a couple more, 1
M  Ready, set, go
M  Ready, put your arms back, go
G  Yeah

Verbal = 8  Model = 12  PA = 0  General = 11  Specific = 0

Session  8 trained
M  Step with your left foot
V  Try it
G  Yeah, see, isn't that helping you a little bit
V  OK, try it again
M  Yeah when you - keep it sideways, then do it
M  Turn around like this nWow, watch me very closely, I step, see
V  Do you want to try it - OK, turn around, put your left foot out, 
then throw it, Yeah, your left foot
M  Turn around, OK, 1, turn around like this, have your left foot go out, 
stand straight like this and put your left foot out
S  Good job
G  Good job
G  See, isn't that helping you better, you're doing a great job
M: OK, just get in this position, don't put your foot out, and, when you're going to throw, put your foot out, OK.

G: Yeah, see.

V: Now stay sideways and then step, step.

G: Good job, see you're doing a great job.

G: Yeah, good job, 1.

G: You are doing so good.

G: Good job, you have a good throw.

M: Step sideways and then throw it, put your foot out.

G: Good job.

V: Step.

G: Good job, 1.

S: Yeah, you're putting your foot out.

G: Good job, 1.

G: Good job.

G: You're doing great, aren't you.

G: Good job.

G: You're doing very good.

G: Good job.

V: Step.

G: Yeah, see, is it helping you better to get the softball farther?

G: Good job.

M: 1, one thing is you have to turn, turn like this then put your foot out, put your left foot out, yeah, then throw it.

G: Yeah, see.

G: See, you're doing a great job, 1.

G: Good job.

M: Good job.

G: Yeah, but remember to step with that foot.

V: Yeah, turn sideways and step with the opposite foot.

G: Great.

Verbal = 8
Model = 7
PA = 0
General = 21
Specific = 2

Session 9 trained

G: Good job.

G: Maybe we can play it later.

V: Throw.

G: Good job.

V: Throw it like a baseball.

G: Yeah.

G: Back up a little, 1, stay there.

G: Good job.

G: Woh.

V: You want to do that.

G: Move back a little.
Woh

Session 10 trained

Woh
G Good job, 1
G Good job, you got a good throw
Woh
S Good job, 1, I like your arm
G Good job
Woh, it went over your head
S Good job, 1, you're doing good with your arms
V Watch the ball when you catch it
S Good job, 1, arms doing good
G Wow, good catch
G Good job
Woh
Woh
Oh, short
S Good job, 1, I like the arm movement
Woh
G Good throw, 1
V Watch the ball when you catch it
That went fast
G Good job
G Good job
G Good job, 1
Woh
Woh
G Good job
Woh, short
G Good job, 1
Right between your legs that time
G Good job
V Can you try to throw it down here, you can do the regular throw, just a regular throw, see, if you're a pitcher, you want to stand up but, if you're a catcher you want to get down
Woh
G Good job
G Good job 1
G Good job
A couple more then we can do other stuff, we can do jumping jacks
G Good job
Back up
G Good job
Woh
Good job

Verbal = 3  Model = 0  PA = 0  General = 18  Specific = 4
Appendix L

Peer 2 Teaching Behaviors
Peer 2 Teaching Behaviors

Session 4 untrained

V Now you try
V You try now, 2
V Now jump, jump
V Can you jump, 2, watch (no model)
V You jump then
M Go like this (model), can you jump
V 2, jump, jump it
V Now jump, jump
V Now jump
Do you want me to jump that
V OK, you jump first
V 2, you jump first
Is that too high for you
V Jump 2, jump
V 2, can you jump that
PA 2, do you want to jump together
G Oh, good job
PA (jump together)
V OK, let's jump again 2,
V OK, let's jump now
V Your turn, 2
PA Do you want to jump it together (PA)
V Bend your knees
G You did it
PA OK, let's do it again, let's jump this rope (PA)
V Now can you jump that
PA Jump this, 2 (PA)
G You did it
PA Let's do it again, let's go this way (PA)
PA (jump together)
PA (jump together)
G We did it
PA (jump together)
PA (jump together)
G All right, you did a good job today, 2

Verbal = 17 Model = 1 PA = 10 General = 5 Specific = 0

Session 5 untrained

V Jump, 2, two feet
G Good job
V Jump a little bit higher
Try again
Jump, 2
Jump, you can do it, jump
Jump over the rope this time, over the rope
Jump over the rope
Can you jump over the rope (M)
Jump
Good job
My turn
Do it again, 2
Can you jump two feet
Jump like this, can you jump like this, 2
One more time
Go, go do it
Two feet jump (M)
All right, 2, good job
Great job
All right
Doing great
All right

Verbal = 12  Model = 3  PA = 0  General = 7  Specific = 0

Session  6  untrained

Jump, 2
All right, good job
My turn
Jump again
Jump
OK, go now
All right, 2
My turn, or do you want to go again
2, 2, 2, will you teach me how to jump
Show me how you jump
Is that how you jump
Come do it
Show me how it's done
2, will you jump again
Last time
All right, good job, give me five

Verbal = 8  Model = 0  PA = 0  General = 3  Specific = 0

Session  7  trained
All right, good job

All right, let's try a couple more times

No, we're playing a few more times

2, no, don't bend it down you'll ruin it (batting tee)

Can you swing level

Swing with two hands, OK

2, swing with two hands

2, can you swing with two hands

Can you show me how to swing with two hands

Bat with two hands, OK, good job

2, wrong way, you almost hit me

Can you try to stand over there and bat toward that wall

2, bat toward this wall, OK

Now let's bat, let's bat

2, no, let's bat OK

2, come over here and bat like this (M)

OK, go over there and bat

2, get the bat out of your shirt; you're going to stretch it out

Come on, come over here and bat

2, get over there

2, come over here first

OK, but will you bat over here

OK, bat toward that wall

A little more lower

Good job

Verbal = 14  Model = 1  PA = 0  General = 3  Specific = 1

Session  8 trained

2, jump like this

2, jump it's your turn

2, put your arms back, put your arms back when you jump

2, put your arms back and bend your knees

OK, now try it standing still

Good job, 2

Now will you try going like this, bend your knees and jump like this, 2

2, yeah, remember what (teacher) told you, 2, what come here 2

Ready, set, jump

There that was a good one

2, now try standing right here and bending your knees

2, watch your feet

2, are you bending your knees when you jump, bend your knees and go

Bend your knees now, 2, remember what (teacher) said, bend your knees

and put your arms back and then jump

But when you jump, put your arms up

Can we try one more time now, OK

2, look
OK, let's try it one more time except this time you need to put your arms up
2, when you jump, jump like, and put your arms up
Try it
Good job

Session 9 trained

2, let's go stand over here
2, here throw it to me
Nice try, good job
2,2,2,2, look look 2,
When you try to catch put your arms out, 2, stop stop we're going
to get a little closer
That was too short
Come on, 2
Throw it to me
Throw it that way, 2, throw it that way
OK, can I see it
You want me to throw it
Let's see you try it, you try it
It's OK
2, when you try to catch it hold your arms out like this
2,2
Good throw
Perfect
2,2
Good try, I liked the way you put out your arms
A little too high
Great throw
Oh, almost

Session 10 trained

Let's go get the frisbee
2,2, got the frisbee
2, do you want to stay on this side or that side
2,2,2, look, oh, sorry
2,2
2, throw
2, yeah we caught it
2,2, it's right there
Here 2, throw it
2,2,
G Almost
G 2, oh, almost
G Oh, almost

Verbal = 4  Model = 0  PA = 0  General = 4  Specific = 0
Appendix M

Peer 3 Teaching Behaviors
Peer 3 Teaching Behaviors

Session 4 untrained

M 3, look, go like this
V Just go
G OK, 3
V OK, keep on going
G Good job, 3
G OK, good job
V OK, 3, you want to try again
G Yeah, good job
G Yeah you're getting better, very good
V You want to try again
3, do you want to practice jumping with me
M 3, can you jump like this
G Good job, 3, you're getting much better
V Try that again
G Good job
V Try again
G Good job
M 3 try to jump over the rope, like this
G Good job
V OK keep on going
G Good job, 3
M Want to practice one more time, go like this
V Now jump
G Good job
G Good job
G Good job

Verbal = 8 Model = 4 PA = 0 General = 13 Specific = 0

Session 5 untrained

G Good
V 3, keep your eye on the ball
Don't be afraid of the ball
V OK, 3, catch it

Verbal = 2 Model = 0 PA = 0 General = 1 Specific = 0

Session 6 untrained

V Jump real far, as far as you can
G Good job
M Do you want to try again, OK come to the mat OK and go like that
G OK, good job, you're doing it
3,3, would you like to go now
M 3, don't take a step before you do it, go- do it like that
G Good job, OK, now you're doing it
V Try again
G Good job
V Go ahead, try again
G Good job
G OK, good your getting much better
V 3, can you jump
G OK, good job
V 3, do you want to jump at the same time as me
OK 1,2,3, jump
G Good
Don't jump more than once OK, just jump one time
V OK, 3, jump again
G Good job
V 1,2,3, jump
V 1,2,3
G Good job

Verbal = 8 Model = 2 PA = 0 General = 10 Specific = 0

Session 7 untrained

M OK, now you'll jump with me, OK, on the red lines, 1,2,3
Come on 3,3,3, you don't have to run around, just come back OK
M 1,2,
M When you jump, 3, you go like that, you go, OK
G Good job
You got a haircut, when did you get a haircut, you like it, OK
M Go like that
G Good job
M Now let's try on the red line, 1,2,3
G Good job
Wait a second
M 1,2,3
G Good job
3,3,3, come over here
M 1,2,3
G Good, you jumped
M 1,2,3
M Start on this line right here 1,2,3
G Good job
M 1,2,3
Nope, don't jump twice, just once, OK
M 1,2,3
G 3, you made it up here, look at it, OK
M 1,2,3
G Oh good, you did it again, right there
M You want to try again, 1,2,3
G Good job, you almost made it up to that line
M 3,3 - 1,2,3
G Good job
V OK, 3, one more jump
G Good job

Verbal = 1  Model = 14  PA = 0  General = 11  Specific = 0

Session 8 trained

M Ready position, go like this, can you go like that, OK
V Keep your eye on the frisbee
S Good job, 3, you caught it and you brought it in
V OK, 3, throw it to me
G Good job
V OK, here we go, ready position, yeah you're getting better
G Good job, you almost caught it
G Good
V OK, 3, ready position, OK keep your eye on the frisbee, OK, OK 3 keep your eye on the frisbee, get in the ready position
G Oh good, sorry, that was my fault, you caught it pretty well
M Ready position, go like this, go like this
PA Here, bend your elbows like this and when you catch the frisbee you bring it in, OK, keep your arms like that, OK
V Now catch the frisbee
G Good job, that's what I'm looking for, OK
G Good throw
V Do what I told you, keep your eye on the frisbee
G Oh good, you almost caught it, that was a little bit my fault
V Get in the ready position, OK
G Good job, almost caught it
V OK, get in the ready position
G Good job, 3, you're getting much better at this
V OK, 3, get in the ready position
G Good job, that was good
G Good, I like the way you can throw it too
V Get in the ready position, ready
G Good job you keep on catching it really well you're getting better at this
V 3,3,3, don't forget ready position, keep your eye on the frisbee and try to catch
S Good job I like the way when you catch it you bring it in
which is a good part, that's one of the main parts

G You're getting there
V Get in the ready position
G Good job
V Keep your eye on the frisbee
G Good job, you caught it
M Ready position, go like this, 3, go like this, OK 3
G OK, good catch, you brought it in again which is good
G Good throw
V Ready position
G Good job, you almost had it there
V What, you OK, oh, here you go, get in the ready position
G Good job, you caught it again
V OK, OK, 3, get in the ready position and try to catch it, remember what I told you
G Good, oh that was my fault but you did a good job trying to catch it

Verbal = 16  Model = 3  PA = 1  General = 20  Specific = 2

Session  9 trained

G OK, yeah
   Don't throw it hard, lightly
V OK, ready position, 3, ready position
M Like this
S Oh, good job, you caught it and brought it in
G OK, good throw
V Ready position
V OK 3,3, throw it to me 3
   Not so hard, OK
V Ready position
G Good job
   Lightly
V OK, here get in the ready position
G Good job, now throw it lightly
G Good job
V Ready position, 3
S Oh, sorry that was my fault, you caught it and brought it in though
V OK, ready position, keep your eye on the frisbee
G Oh, good job, you almost caught it
V 3, ready position
G Good job you almost caught it nice try
G Here, good job
V OK, 3, throw it to me
G Good job
V Ready position, ready position
V 3,3, throw 3,3, throw it, 3
V 3, ready position OK here
Good job, not so hard
OK, ready position, 3, ready position 3,3, pay attention, OK
Good job, 3
Not too hard
3, ready position
Good job, you caught it and brought it in

Verbal = 14
Model = 1
PA = 0
General = 12
Specific = 2

Session 10 trained

Be in the ready position like I showed you, keep your eye on the frisbee
Good job, you caught it
OK, throw it to me, just throw it to me 3
Ready position, keep your elbows bent
Good job
OK, 3,3,3, throw it to me, 3 throw it to me, 3
OK here, ready position, OK 3
Yes, you caught it and brought it in
OK, 3,3, you want to throw it to me, OK, can you throw it overhand
M 3, throw it that way
V 3, OK, get in the ready position
G Oh, good job, you caught it
You OK, sorry
V 3,3,3,3, get in the ready position
PA I'm going to show you ready position, elbows bent like this OK
G Good job
V 3,3,3,3, ready position 3, pay attention, ready position
G OK, good job
Pay attention
G Great job, you caught it
M 3,3, like this
G Oh, good job
G OK, oh good job
V Here, why don't you throw it back to me, OK
Sorry it was my fault probably
OK, pay attention
G Good job you caught it
3,3,3
G Good job
V Ready position
G Good job
V Ready
G Oh good job
V 3,3,3,3, ready position, OK
G Good job, 3
G Good job
Session 11 trained

M Watch when you have the ball and when you throw it,
when you're like this, you step and bring your heel up
and over and throw, OK
V Stand sideways and throw
G Good job
V 3, go ahead
S Good throw, it was nice the way you stepped and threw,
like I showed you, sideways
M 3, I don't think you stepped that time, remember you go like this,
you step with your foot like that and then like that
G Ok, good job, but try to throw the ball as you're doing it
G Good job
G Good job
V Ready, OK, 3, throw the ball, remember to step and throw
G Good job
V Overhand
V 3 ready
G Good job
M Here why don't you catch like this and when you throw, you're like this
G Good
V 3,3,3, step
S Good job stepping, great job
V 3,3, here
G 3, good job, OK
G Good job, OK
G Good job, OK
G Good job, 3
V 3, here
M Good job, throw like that
G Oh, good throw
G Good job, you're throwing it much better than before, huh
G Yeah, nice throw, try to throw it over
G Good throw
G Good throw

Verbal = 13 Model = 2 PA = 1 General = 14 Specific = 1

Verbal = 7 Model = 4 PA = 0 General = 16 Specific = 2
Appendix N

Peer 4 Teaching Behaviors
Peer 4 Teaching Behavior

Session 5 trained

V Get ready to catch the ball, get ready to catch the ball
V Throw it, throw the ball
G Yeah
V Ready to catch the ball
G Good catch, you scooped it up
G Yeah nice throw, all right
V Ready to catch
G Nice throw
G Nice throw, 4
V Ready catch
G Ready to catch
G Nice throw
G Ready to catch
G Nice throw
G Ready to catch
G Ready to catch
V Step, step, step
M When you throw the ball, step like this, OK
G You got it, OK
V Throw
V Ready to catch

Verbal = 8 Model = 1 PA = 0 General = 6 Specific = 0

Session 6 trained

V Throw the ball, 4, throw the ball
G Nice throw
V Get your scoop ready
V Here 4, 4, throw the ball
M Step like this
M Here, 4, throw the ball and take a step like that, OK
M OK, throw the ball, step like that
V Get ready to catch
V Throw the ball and step
M Throw the ball and step this way and then throw like that, OK
G Nice throw
V Get your scoop ready, get your scoop ready
V Throw the ball
M Step-go step-go step, like that
V Get your scoop ready, get your scoop ready
V Get ready to catch
V Throw, throw the ball and step
M 4, 4, throw the ball and step like this- step
V 4, get ready, 4, 4, here
M OK, 4, 4, take this foot and put it right there, yeah, and then throw, Yea, like that
V  Get your scoop ready, get your scoop ready
M  OK, like this and this and throw, 4,4, throw
G  yeah
V  4, 4, catch
V  OK, take the ball and throw
M  4,4,4,4, here put your foot out and throw

Verbal = 14  Model = 9  PA = 0  General = 3  Specific = 0

Session  7 trained

G  Yeah, nice catch
V  Get your arms ready
G  Good catch
V  Hands ready
G  Nice catch
V  Get your hands ready, with your hands catch
G  Good catch
V  Arms ready
G  OK, OK
V  Yeah, good catch
G  OK, 4
V  Oh, sorry, about that one, it didn't quite get to you
G  Oh, nice catch
V  4, throw the ball
V  Arms ready
V  Reach for the ball, reach
G  OK, nice throw
V  Use your hands, catch, 4,4, get your arms ready
G  get your arms ready, reach for the ball
V  Nice catch
V  4, throw the ball
V  Get your hands ready
V  Throw the ball
V  Here, 4, ready, get your hands ready

Verbal = 12  Model = 0  PA = 0  General = 8  Specific = 0

Session  8 trained

G  Nice catch, nice catch
V  Get your hands up, get your hands ready, 4, hands ready
G  Nice catch, nice catch, nice catch, way to move
V  Get your hands up in the ready position
G Yeah, nice catch, nice catch
V 4, get your hands up, get your hands ready, 4, ready catch
G Nice catch
G Nice throw
V Get your hands ready, OK, catch
S Nice catch, nice reach
V 4,4, throw
V 4, hands ready catch
Oh, a little short
V 4, 4, 4, hands ready, catch
V 4, throw
V 4, hands ready, 4,4,4, hands ready and catch
G Oh, nice job
V Hands ready
G Nice catch
V 4, ready, ready, hands up and catch
G Nice job
G Nice throw too
V Get your arms ready
S Nice reach, nice catch
V 4, hands ready, reach and catch it
S Nice catch, way to reach, get your hands ready
V Reach
S Nice reach, yeah good
V Throw it, throw
V 4, hands ready, get your hands up
G Oh, nice catch, nice catch
V 4,4, here throw the ball
V 4, get your hands ready
G Nice catch
V 4,4, get your hands up, get your hands up, reach
G Yeah, great catch
V Catch, yeah that's right
S Sorry about that one
V 4, catch, hands ready, hands up, OK catch
V 4, hands ready, catch
S Nice catch, nice reach, good reaching
V 4, get your hands ready, 4,4,4
V 4, throw
V Hands ready
G Nice catch

Verbal = 25  Model = 0  PA = 0  General = 13  Specific = 5

Session  9 trained

M OK, hold the bat, put your hands up there like that OK, and then swing
G Yeah, like that, that's nice, good swing
V Why don't you try that again, now hit the ball

G Yeah, nice hit

V Want to try to hit the ball again

G You missed the ball but that was a nice swing

V Now try to hit the ball, OK, hit the ball

M Hold the bat up high like that and boom

G Oh, nice hit

M Put your hands together like that, OK

V Hold the bat, hold the bat high

4, don't hit the ball until I say go, OK

Oh, well

V Go, hit the ball

PA 4,4, hold the bat like that

G Nice hit

M Hold the bat like this, yeah, put your hands together

M Hold the bat, put your hands together

M 4, put your hands together and hold the bat up high

V Hold the bat up high, put your hands together

Oh, well

M 4, put your hands together

M Put your hands together, 4

G Yeah, there you go, nice hit

V 4, put your hands together

G Yeah, like that

V OK, put your hands together

OK, last one, make this one good

Not yet

4,4,4, can I see the bat, OK, thanks

M Hold the bat, hands together like that and go woosh, hit the ball real hard

OK

G Yeah

Verbal = 8 Model = 9 PA = 1 General = 8 Specific = 0
Appendix O

Peer 5 Teaching Behaviors
<table>
<thead>
<tr>
<th>Peer 5</th>
<th>Teaching Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session</td>
<td>5 trained</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>G</td>
<td>Good job</td>
</tr>
<tr>
<td>V</td>
<td>Have your hands ready</td>
</tr>
<tr>
<td>G</td>
<td>Yeah</td>
</tr>
<tr>
<td>V</td>
<td>OK, here, get ready</td>
</tr>
<tr>
<td>V</td>
<td>OK, 5, ready</td>
</tr>
<tr>
<td>G</td>
<td>Nice throw</td>
</tr>
<tr>
<td>V</td>
<td>OK, ready</td>
</tr>
<tr>
<td>G</td>
<td>Nice catch</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>S</td>
<td>Good job though, that was a good one with your hands out</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>G</td>
<td>Nice throw</td>
</tr>
<tr>
<td>G</td>
<td>Oh, nice shot</td>
</tr>
<tr>
<td>V</td>
<td>Ready</td>
</tr>
<tr>
<td>G</td>
<td>Oh, nice catch</td>
</tr>
<tr>
<td>G</td>
<td>Nice throw</td>
</tr>
<tr>
<td>G</td>
<td>Nice catch</td>
</tr>
<tr>
<td>G</td>
<td>Nice catch</td>
</tr>
<tr>
<td>V</td>
<td>Get ready, OK, 5 get ready</td>
</tr>
<tr>
<td>V</td>
<td>Get ready</td>
</tr>
</tbody>
</table>

Verbal = 12  Model = 0  PA = 0  General = 10  Specific = 1

<table>
<thead>
<tr>
<th>Session</th>
<th>6 trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Ready to throw the ball and to step forward, and throw like that and then, when you're catching, same thing stop it and bring it in, OK</td>
</tr>
<tr>
<td>V</td>
<td>OK, ready</td>
</tr>
<tr>
<td>G</td>
<td>That's OK</td>
</tr>
<tr>
<td>M</td>
<td>So you want to stand to your side and step forward with this foot and reach</td>
</tr>
<tr>
<td>S</td>
<td>Good job, I like the way you stepped forward</td>
</tr>
<tr>
<td>V</td>
<td>OK, get ready to stand to the side</td>
</tr>
<tr>
<td>G</td>
<td>Good job</td>
</tr>
<tr>
<td>S</td>
<td>OK, good job turning to the side</td>
</tr>
<tr>
<td>V</td>
<td>This time try to step forward, OK</td>
</tr>
<tr>
<td>G</td>
<td>OK, that's good</td>
</tr>
<tr>
<td>M</td>
<td>Try to step forward, OK, try to do it like that, OK</td>
</tr>
<tr>
<td>G</td>
<td>OK, good job, try to do it all at the same time like that, OK, but that was good</td>
</tr>
</tbody>
</table>
OK, remember, like that, OK, step forward this time
you're doing good though

OK, remember to, 5, remember to step forward

Good job, try to do it all at once like that, OK, that was good

Ready, 5, remember to step forward

Good job

Remember to turn to the side and step

OK, good

This time step forward sort of like that, OK, and step and throw

That was good

Session 7 trained

Bring it up like that, want to try that, OK, 5,5

OK, remember it's overhand

Good job

This time, step

Good job, that was good

OK, OK

Good job

Good job

Good job

OK, that side

Like this, step like this, this time step like this

Good job on your step

Step

Step like this OK

You're doing good

Good job

Good job

Good job

Good job stepping

Good job

Good job

Excellent, that was perfect

Good job

You're doing good, remember to step, OK

That's good stepping, that's really good

Good job

Good job

Good

Good job

OK, good job

Verbal = 5 Model = 5 PA = 0 General = 7 Specific = 2

Verbal = 4 Model = 3 PA = 0 General = 18 Specific = 3
Session 8 trained

OK
G Oh, that was good
G Nice, that was good
G Oh, good job
G Oh, good job, nice throw
V Get ready
G Oh good, that was close
G Good job, that was good
V Ready
G Good job
S Oops, that was still good that you reached for the ball
G Good job
G OK, it's just a microphone
G Good job
V Ready
G Good job
G Good job
G Oops
S OK, that was good, good job that you are reaching out
G Good job
G That's OK, that was good
S Good job, that was good that you're reaching out
S Oops, my fault
S That was good reaching out
G That was a good job
V OK, ready
S Oh, that was good reaching out
V OK, ready
S That was good though, that was good reaching out
V OK, ready
G Good job
V OK, ready
G That was good
G Good job
S That was real close though, you're doing good
V OK, ready
G Good job
G Oops
G One more
V OK, try to get this one
G Good job

Verbal = 9 Model = 0 PA = 0 General = 19 Specific = 6

Session 9 trained
M  Stand like this and step
G  Good job
V  This time try to step, OK
M  Yeah, step with the other foot like this
G  OK, but you're doing good
G  Yeah
G  Good job
G  Good job
G  Good job, that was good
V  OK, remember to step
G  Good job
S  OK, that was good stepping, good throw
    What, you want to stop, a couple more, OK
G  Good job
G  Good job, you're good at throwing
    OK, you want me to throw it
G  Good job
G  Good job
    A few more
V  OK, remember to step, that was good
G  Good job
G  Good job
G  OK, last one, make this one good
G  Good job

Verbal = 3  Model = 2  PA = 0  General = 14  Specific = 1
Appendix P

Peer 6 Teaching Behaviors
Peer 6  Teaching Behaviors

Session 4 untrained

V Stand right there and I'll - stand right there, ready
G Oh, good throw
V Ready
G Good catch
V OK, can you throw it to me - throw it to me, OK
G Oh, good throw
V OK, ready, stay there, ready
G Good catch, OK
V Now throw it to me
G Good throw
V OK, ready
G Good catch
V Throw it to me here, throw it to me
V OK, OK, ready stay right there, ready catch
G Good catch
V Here throw it to me
V Ready, put your arms out, OK, ready
G Good catch
V Here, ready
G Oh, you OK, OK here
G Good throw
V OK, ready
G Oops you dropped it, here you go
V Ready, here, throw it to me
V Ready, stay there, 6, ready
M Almost try to reach for the ball, try to go out and reach for the ball
V Ready, ready
G Oh, almost
G Good catch
V Here, ready, throw
V OK, ready
G Good catch
V 6, come here, throw
G Good throw
G Good catch
V OK, ready
G Almost, almost got it
V Ready
G Good catch
V 6 ready, throw
G Good throw
G Almost
V Here you go, throw it to me
V  Ready, stay there  
Here, here, here  
Ready, come on over here, stay right there, ready  

G  Good job  
OK, ready, stay there  

V  Ready  

G  Good catch  
Here, OK  

V  Ready, stay there  

G  Good catch  

V  Here, ready  

G  Nice throw  

V  Stay there, OK, ready  

V  Ready  

G  Good catch  

Verbal = 29  Model = 1  PA = 0  General = 2,3  Specific = 0

Session  5 trained

M  OK, ready, stay right there, 6, go like this, go like this, bend your elbows  

PA  Go like this  

V  OK, ready, stay like that, ready, bend your elbows more  

M  Go like this, put your elbows down like that, OK, stay, stay  

G  6, oh, nice try  

V  Here, 6, here throw it to me  

M  OK, ready, go like this, go like this  

PA  OK, go like that, OK, ready stay  

V  6, bend your arms, bend your elbows  

M  Go like this, OK, stay, ready 6  

G  Good catch  

V  OK, 6, no, over here, over here, 6, OK ready, bend your elbows  

PA  Go like this, put your elbows down like that, OK, put your hands out like that, OK, ready  

G  Good catch  

V  Here, now throw it to me  

G  Good throw  

M  OK, ready, go like this, go like this, OK, stay, OK, ready  

G  Oh, nice try  

V  6, over here, 6, right here, OK, ready  

M  Go like this  

PA  6, go like this, elbows down like that  

V  Ready, ready  

G  Oh, nice try  

PA  Ready, go like this, ready
Nice try

Good catch

Here, 6, here, 6

Good throw

Ready, go back right there, ready

6, go like this, OK, ready

Good catch, OK

Right here, throw it to me

Good throw, all right

Verbal = 10  Model = 6  PA = 6  General = 11  Specific = 0

Session  6 trained

M Go like this, bend your elbows

PA Go down like that, OK, stay, stay

V Oh, try to reach for the ball, OK, ready

Oops, OK

V Ready

Oops

OK, here, 6, here

G Good throw

V OK, ready

Oops, OK

V Here you go, 6, here, 6

G Good throw

V Ready, here you go

M OK, go like this, OK ready

G Almost

V Here you go, here

G Good throw

Oops

V OK, ready

Oops

V OK, stay there and go, here, 6, to me, 6, right to me

G Good throw

V OK, ready, OK, ready

G Good catch

V Here 6, 6, throw the ball to me, OK

M Oh, put your arms down lower, go like this

PA Bend your elbows like that, OK, now stay, stay, OK, go down put your elbows down like that, now stay, stay

V OK, catch

Oh well, here you go

V Throw it to me, 6, throw it to me

M Go like this, go like this

PA Go down like that, now like that stay, stay, now catch
G Oh, almost, that was close though
M OK, 6, ready like this, 6

Verbal = 13  Model = 5  PA = 3  General = 7  Specific = 0

Session 7 trained

PA Go like this, OK, go like that, now stay, stay, stay
OK, stay like that and I'll throw you the ball, stay, stay
V Catch
G Good catch
V OK, here, OK, 6, throw it to me, throw it to me, 6
M 6, 6, stand in that square OK, go like, bend your elbows, stay, stay, 6
G Oh, almost
V OK, here, now throw it to me, 6, now, throw it to me, throw it to me, here
M OK, ready, go like this, go down
PA Bend your elbows, stay, stay, 6
Oh
M Ready go like this, go down
PA Like that, OK, 6
G Oh almost
OK, here you go, 6
V Good throw, all right
M Go like this
PA Bend your elbows, OK
V Ready
Oh, you had that one
V OK, here, 6, here, throw it
V OK, here you go, OK, 6, here
M OK, good throw
PA Like that now, stay right there, stay, stay ready go down, OK, ready
Oh well, 6
Oh, Oh, did that hurt, here you go, 6,6,6, stand right there
stand in that square, stand in that square here,
V OK, go back over there ready
Oops, my fault, OK, here you go
G Good throw
OK, go in the square
V OK, ready 6,6,6
G Good catch
V Ready, ready
G Oh almost
V Here you go, 6, 6, 6, here
Stay right there
M Go like this, ready
V Oh, here, 6, here, 6, here
V Ready
OK, 6, try to reach for the ball, 6, try to reach for the ball, go like this
6, here
Good throw
OK, stay there
Oh, good catch
Verbal = 14  Model = 6  PA = 5  General = 9  Specific = 0

Session  8 trained

OK, good hit now, 6, come here stand right there, stand right there, right there, OK, that's it, now hit the ball
Ready, swing
Oh, OK, OK
Hit the ball right there, OK
Go like that, OK
OK, move back a little bit, right there, OK, that's better
hit the ball right to me
OK, here we go, OK, put your hands apart like this, no, this one up here and that one, no, like that way, 6, put that hand right there and that hand right there, OK, now hit the ball
OK, 6, put this hand up here and that hand right there, 6, 6, OK, 6, ready, ready, go
OK, go like that, OK, put the other hand right there, OK, no, put this up and that one is like that, OK, and then like this, go, boom, like that, OK
Hit the ball
Go like this, OK
Try to hit the ball, hit right there
OK, now try to go like this
OK, come here, 6, right there, 6, stand right there, 6, stand right there
OK, ready, hit the ball
Good hit
OK, 6, ready, try it again, the exact same thing, here, 6, here, 6
Oh, almost OK
OK, 6, ready
Good hit, all right
Here we go again, level swing
OK, 6, now, when you go through try to go flat like that, OK
OK, try it, 6
Yeah, good
6, come on back here, 6, OK, ready, taking your victory lap or something
OK, here you go
Good, pretty
good
OK, level
Good hit
All right, OK, stay right there, stay, stay like that
OK, ready, OK, hit it to me
OK, remember nice and level, go like this, OK wait a second, OK
V 6,6,6, hit the ball
OK, two more, OK, here you go 6, ready, 6,
let's make these last two good ones
V OK, hit the ball
OK, ready

Verbal = 14  Model = 7  PA = 4  General = 7  Specific = 0