AN ABSTRACT OF THE THESIS OF

Lauriece L. Zittel for the degree of Doctor of Philosophy in Human Performance presented on April 30, 1993.

Title: The Effect of an Integrated Adapted Physical Education Setting on the Motor Performance of Preschool Children with Developmental Delays

Abstract approved: Redacted for Privacy

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The purpose of this study was to investigate the effect of an integrated adapted physical education setting on the motor performance of preschool children with developmental delays. Subjects in this study participated in segregated and integrated adapted physical education classes. During the integrated conditions, same-age peers without delays participated in activities as "proximity peers" (Jenkins, Speltz & Odom , 1985). Child-directed activities were presented in each class and subjects were observed practicing locomotor and object control skills. The quality of each performance was analyzed to determine the number of critical elements present in the performance and the level of teacher or peer prompt required to initiate and complete each performance.

A single subject reversal design (A-B-A-B) was used in this investigation. Four children with developmental delays were filmed within an eight-week school schedule while practicing two fundamental gross motor skills during segregated and integrated conditions. The level and trend of the data was calculated to describe the quality of each child's motor performance within each condition, between conditions, and across segregated and integrated conditions. The results of this study provide evidence that children with developmental delays are able to maintain their level of gross motor skill and independence within an integrated adapted physical education setting. Although day-to-day variability was calculated for each subject, overall skill level remained stable and their level of independence was not compromised in the integrated setting. Recommendations for future research are made based upon the results of this investigation.

The Effect of an Integrated Adapted Physical Education Setting on the Motor Performance of Preschool Children with Developmental Delays

by

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A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirement for the
degree of

Doctor of Philosophy

Completed April 30, 1993

Commencement June 13, 1993

APPROVED:

Redacted for Privacy

Associate Professor of Exercise and Sport Science in charge of major

Redacted for Privacy

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Date thesis is presented April 30, 1993

Typed by researcher for Lauriece L. Zittel

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Dr. Jeff McCubbin for his guidance and support as my major professor. I appreciate the time he has spent advising my course of study, assisting me to complete my dissertation and for his encouragement toward continued professional growth. I respect and admire his professional committment and thank him for sharing his spirit and love for people of all abilities.

I appreciate the support that each member of my committee has provided. My special thanks to Dr. John Dunn for his belief in me and therefore, the opportunity to pursue leadership training in adapted physical education, to Dr. Meredith Brodsky for her encouragement and guidance in special education, Dr. Alan Sugawara for his advisment and shared love for the study of young children, and Dr. Majorie Reed for her interest in my research and guidance as my graduate council representative.

I would like to thank the Corvallis School District for their support and approval to conduct this research. My appreciation is extended to the classroom teachers for their assistance during this study and for all I've learned from their work with young children. A special thanks to all the parents and children that participated in this project.

I have been blessed with tremendous love and support from my family. Most of all, my heartfelt thanks to my parents, Patricia and George, who continue to provide me with guidance and encouragement to follow dreams, to Beth for sharing her strength and joy for living, to my brothers Bill, Gregory, David and their families for giving so much while I've been away and to Tricia, "my little one", for being my dear friend.

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CHAPTER I

INTRODUCTION

The field of early childhood special education is designed to provide a free, appropriate public education to children beginning at age three. Section 619 of Public Law (PL) 99-457, the Education of All Handicapped Children Act (EHCA) amendments of 1986, mandate that early education be delivered to preschool age children (3-5 years) identified as developmentally delayed, those at risk for developmental delay and/or those diagnosed with a specific disability. This education is to be provided in the least restrictive environment (LRE) (Federal Register, 1989). Placement with normally developing peers is considered least restrictive unless a child is not benefiting from, or is being harmed in, such an environment. The intent of the legislation is to provide supported, integrated environments to enhance overall development for preschool age children (Odom & McEvoy, 1988).

The LRE mandate remains a problem for many states. Most states do not provide regular education for preschool children without disabilities. Finding a mainstreamed or integrated setting for preschool children with developmental delays is difficult (NEC*TAS, 1989; Odom & Warren, 1988). Collaboration between early childhood special education and public and private agencies will provide options in integrated placements that include: public and private day cares, Head Start classes, nursery schools, and child development centers (NEC*TAS, 1989). These placements may provide a mainstreamed environment for young children with a disability. However, integration most often occurs within the special education classroom. Children without disabilities are brought into the specialized classroom. Integrated preschool special education usually results in a higher number of children with developmental delays within the environment (Odom & McEvoy, 1988).

Legal, philosophical, and educational rationale have been forwarded to support integration for preschool children with special needs (Bricker, 1978; Jenkins, Odom,

& Speltz, 1989). Legal mandates and ethical views have evolved throughout the years in support of integration. The educational rationale continues to be debated in the literature. Efficacy research concerning preschool integration is difficult to interpret. Methodological inconsistencies make conclusive statements impossible (Edmister & Eckstrand, 1987).

Much of the research in early childhood integration has focused on social development. Social interactions have been investigated as a result of early literature indicating the potential for social isolation of children with delays in the mainstream (McLean & Hanline, 1990). Several studies indicate that normally developing children have a preference to interact with peers of similar developmental level (Jenkins, Speltz, & Odom, 1985; Odom & McEvoy, 1988). Children with delays demonstrate a preference to interact with same-aged peers (Guralnick & Groom, 1987; Guralnick & Groom, 1988). Classroom organization, relative to the amount of structure and teacher direction, has contributed to social interaction levels in integrated settings (Burnstein, 1986). Research is needed to address the benefits of integration on developmental skill areas other than social interaction (Edmister & Ekstrand, 1987).

Overall developmental outcomes associated with integration at the preschool level have been researched. Minimal benefits have been demonstrated in integrated over segregated environments for children with developmental delays. No harm has been done by integrating children at this age (Peck & Cooke, 1983) but integration alone may not be effective enough to make a developmental difference. The curriculum and quality of instruction may be more of a factor. Jenkins, Odom & Speltz (1989) believe that language and communication development may be enhanced more than gross motor development in an integrated setting . However, development within the motor domain has not been the focus of integration research.

Research has provided evidence that developmental gains can be made within the psychomotor domain if quality instruction is provided. A few studies have examined a structured, gross motor intervention for normally developing preschool children and have reported positive results (Kelly, Dagger, & Walkley, 1989; van der Mars & Butterfield, 1988). Children with disabilities also benefit from structured gross motor programs (Fewell, 1988; Rimmer & Kelly, 1989). Children provided with opportunities to practice within an appropriate educational environment have shown gains in motor performance.

The effect of providing structured gross motor intervention to preschool children with developmental delays in an integrated setting has not been investigated. A frequently cited rationale for integrating children with their normally developing peers claims exposure to more complex and behaviorally appropriate peer models is educationally beneficial (Peck & Cooke, 1983).

Purpose of the Study

The purpose of this study was to examine the effect of an integrated adapted physical education program on the motor performance of preschool children with developmental delays. The quality of each performance was analyzed to determine which environment, segregated or integrated, provided the best opportunity for children to enhance the quality of their gross motor performance. Specifically, the quality of each performance was determined by: (1) the number of critical elements completed within validated skill sequences and (2) the level of teacher assistance required to complete each performance.

Research Problem

It was hypothesized that a child with a developmental delay would increase the quality of their motor performance when provided structured adapted physical education within an integrated setting.

Operational Definitions

An attempt was made to practice a skill when the child moved into the area where the task was set up and initiated a goal-related movement.

Critical elements are those parts within each skill sequence that have been validated and found to be reliable components of the mature skill pattern.

Developmental delay is defined by individual states. For the state of Oregon children birth to 5 qualify as having a developmental delay if they are 1.5 standard deviations or more below the mean in two or more of the following areas: cognitive development, receptive language, expressive language, gross motor development, fine motor development, social, emotional, or behavioral development, or self-help skills (Oregon Administrative Rules, 1992).

Early childhood special education (ECSE) in the state of Oregon refers to a "... free, specially designed instruction to meet the unique needs of a preschool child with a disability, three years of age until the age of eligibility for kindergarten, where instruction is provided in any of the following settings: home, hospitals, institutions, special schools, classrooms, and community child care or preschool settings, or both." (Oregon Administrative Rules, 1992, p. 1).

Integrated early childhood special education was the placement of preschool age children without delays with preschool age children with developmental delays in an ECSE classroom (Odom & McEvoy, 1988).

Level change and stability were used for within and between condition analyses. Change was determined through a visual analysis of the data and stability was calculated using a session mean and determining the number of points that fell within the stability range.

Levels of assistance were provided to children with prompts that were least-to-most intrusive. Prompts were used by the Adapted Physical Education (APE) instructor or classroom aide within the APE environment to provide the required amount of assistance to complete the skill. In this study, six prompt levels were utilized:

(a) Independent - no prompt required. The child initiated and completed the task to the best of their ability.

(b) Verbal prompt - was given by the teacher or paraprofessional if the natural stimulus did not evoke a task-related response.

(c) Teacher verbal / peer model prompt - was a verbal direction to perform the task along with, or after, a peer model demonstrates the task to be performed. This prompt was considered less intrusive than (d) because of the peer model versus teacher model.

(d) Verbal/ teacher model prompt - was used if a verbal direction alone did not prompt a task-related response. The teacher or paraprofessional gave a verbal cue accompanied by a demonstration of the task to be performed.

(e) Partial physical assist - was physical assistance provided to the child to support a task-related response at the beginning, middle, or end of the performance.

(f) Full assist - was used to provide physical support to initiate and complete the performance.

Preschool mainstreaming refers to the educational placement of preschool age children with developmental delays with normally developing preschool age children (Odom & McEvoy, 1988).

Preschool adapted physical education was an intervention used in which children were guided through planned activities designed to facilitate practice on IEP/IFSP gross motor goals and objectives.

Trend direction and stability were used to analyze the data. Direction or slope of the data pattern were described as accelerating, decelerating, or having a zero celeration line. Stability was determined by examining the number of data points that fell within a specified range around the line.

Assumptions

The assumptions made for this investigation were that:

(a) each child in this study was accurately diagnosed as developmentally delayed;

(b) each child was motivated to practice skills within each planned, preschool adapted physical education activity.

Delimitations

The results of this investigation were limited to preschool age children (3-5 years) with developmental delays who participated in this study. The results should not be generalized to other preschool age children with or without developmental delays.

All children in this investigation did reside in the same county and were generally from the same socio-economic background.

All children received the same adapted physical education curriculum taught by the same instructor.

Limitations

Subjects for this investigation were from an intact class of preschool age children with developmental delays or those at-risk for developmental delay.

Peer models were those that are enrolled in the ECSE site on a voluntary basis.

CHAPTER II

REVIEW OF LITERATURE

Educational service for young children with disabilities has been supported under federal policy for nearly two and one half decades. The Handicapped Children's Early Education Program (HCEEP), established in 1968, was a commitment by congress to explore the benefits of early programming. Demonstration projects were funded and technical assistance established to disseminate early childhood special education (ECSE) information. To date, HCEEP supports innovative research, model projects, outreach, and inservice training for expansion in the field of ECSE (Edmister & Ekstrand, 1987; Hebbeler, Smith, & Black, 1991; Vincent, Brown, & Getz-Sheftel, 1981).

Federal legislation of the 1970's, 80's, and 90's have continued to impact early childhood special education. The Handicapped Children's Early Education Program joined with other special education programs in 1970 when congress passed PL 91-230, Education of the Handicapped Act (EHA). Public Law 94-142, the Education for All Handicapped Children Act, amended EHA as landmark legislation for school-age children but had limited impact for preschool age (3-5 years) children. Congress did not mandate that a free, appropriate public education for preschool children with special needs be provided unless this service was consistent with state law. A Preschool Incentive Grant Program accompanied PL 94-142, but to receive financial assistance a state had to already be serving the children they included in their count. Consequently, less than half the states participated (Edmister & Ekstrand, 1987; Hebbeler et al., 1991). Public Law 98-199, passed in 1983, amended EHA to provided states with noncompetitive financial incentives to establish state-wide service systems for preschool-age children. This legislation proved to be the last stepping stone to the long awaited federal mandate for early childhood special education service (Hebbeler, et al., 1991). Public Law 99-457, EHA amendments of 1986, extended Part B services to age three and created an incentive program (Part H) for infants and toddlers. EHA was amended in 1990 and renamed the Individuals with Disabilities Education Act (IDEA, PL 101-476) (NICHCY, 1991). An amendment to IDEA, PL 102-119, is a reauthorization of early childhood legislation clarifying and updating portions PL 99-457.

Physical education is a direct service for preschool age children receiving early childhood special education services (Churton, 1988). State and local education agencies must provide physical education as part of a free, appropriate public education (FAPE) and be certain that instruction is delivered within the least restrictive environment (LRE). To the maximum extent possible, preschool children with developmental delays are to be educated with their nondisabled peers (NEC*TAS, 1989).

Integration in Early Childhood Special Education

Legal, philosophical, and educational rationale have been forwarded in support of integrated environments for preschool children with developmental delays (Bricker, 1978; Cole, Mills, Dale, & Jenkins, 1991; Jenkins, Odom, Speltz, 1989; Odom & McEvoy, 1988). This justification for integration has guided the work of many professionals and researchers in ECSE (Odom & McEvoy, 1988). The LRE mandate of PL 101-476 applies to all preschool age children receiving special education services. The least restrictive environment for children with developmental delays is an integrated setting (Odom & McEvoy, 1988; Vincent et al., 1981). This interpretation of LRE is difficult for states that do not provide a public education for normally developing preschool age children (Edmister & Ekstrand, 1987; NEC*TAS, 1989). Day care centers, private nursery schools, & Head Start classrooms are suggested as alternative placement options for states faced with this challenge (Federal Register, 1989).

The philosophical rationale for integration is based on the premise that it is morally and ethically best practice to integrate children with developmental delays with their normally developing peers (Bricker, 1978; Vincent et al., 1981). Guided by the principle of normalization (McLean & Hanline, 1990; Nirje, 1985; Odom & McEvoy, 1988; Wolfensberger, 1972), the mainstream is viewed as the best educational placement for young children with delays. Bailey & McWilliam (1990) contend that placement of children with their nondelayed peers in day care settings, for example, would be supported as a normalized environment because it is a typical setting for young children. But the authors argue that the principle of normalization is a broad concept of which mainstreaming is only a part. The individual educational needs of each child should guide placement and instructional practice (NEC*TAS, 1991).

Integrated educational settings may provide developmental opportunities for children with delays (Bricker, 1978; Guralnick & Groom, 1987). Theoretically, integrated preschool environments place elevated demands upon children with developmental delays, thus the opportunity to develop more complex behaviors exists (Vincent et al., 1981). A minimal benefit of an integrated placement should be that developmental gains are at least equal to those a child would receive in a nonintegrated setting. Jenkins et al. (1989) suggest that if harm were to come to children in an integrated environment, none of the rationale would be supported.

Studies in preschool integration have not left parents, teachers, or researchers with any conclusive evidence that mainstreaming or integration within special education classrooms is more beneficial than a segregated environment. Investigations examining the effects of integration at the preschool level have generally found little or no difference between integrated and segregated environments on developmental measures (Cole et al., 1991; Fewell & Oelwein, 1990; Jenkins et al., 1985; Jenkins et al., 1989). Methodological inconsistencies make interpretations across studies difficult (McLean & Hanline, 1990). Programmatic variables used to address efficacy questions differ among studies (Guralnick & Groom, 1988), making statements regarding the efficacy of integration nearly impossible. Studies also vary according to samples studied (Cooke, Ruskus, Apolloni, & Peck, 1981; Fewell & Oelwein, 1991; Marshall, Keating, McDonald, & Snart, 1986), specific role of peers (Cole et al, 1991), teacher training and experience (Cooke et al., 1981;), dependent measures (Cooke et al., 1981;), definitions of integration (Fewell & Oelwein, 1990; Jenkins et al., 1989; Odom & McEvoy, 1988;), program philosophy (O'Connell, 1986), amount of instruction (Fewell & Oelwein, 1991), and amount time in integrated settings (Fewell & Oelwein, 1990).

Much of the literature has concentrated on development within the social domain. Social integration has been a commonly studied theme in the area of preschool mainstreaming (Blacher-Dixon, Leonard, & Turnbull, 1981). Social integration skills are thought to "mediate" developmental outcomes for preschool children with developmental delays. When social interactions take place there is more of a chance that development will be enhanced (Jenkins et al., 1989). Yet, most studies have confirmed that children with delays have fewer interactions with peers during class time than their nondisabled peers (Beckman & Kohl, 1987).

Peer Interactions

Research on peer interactions has produced varied results. Sampling practices may contribute to the variability found in this line of research. Many situations require that preexisting groups be studied thus not allowing for systematic matching for developmental or chronological age (Guralnick & Groom, 1987). Literature on peer preference suggests that certain groups of children will interact more than others (Blacher-Dixon et al., 1981; Cole et al., 1991; Odom & McEvoy, 1988).

Class composition based on chronological or developmental age has been debated in the literature. To provide developmentally appropriate models Cooke et al. (1981) suggest that integration of children with disabilities should occur with peers that are chronologically younger. Theoretically, this match would decrease the disparity found in developmental age. Developmentally matched peers could work together on similar concepts.

Same-age peers tend to be more aware of child-to-child differences and less accepting of children with developmental delays (Marshall et al, 1986). Guralnick & Groom (1987) suggest matching children by chronological age. Although this match creates a more developmentally advanced environment, in their observations of children in play groups the authors have found that mildly developmentally delayed preschoolers show a preference to interact with same-age, non disabled peers (Guralnick & Groom, 1987). In a follow-up study the authors examined the peer related social interactions of mildly developmentally delayed children in specialized and mainstreamed settings. Results indicated that children with delays had more peer related social interactions while in their mainstreamed environment. Their preference was to interact with same-age peers. The tendency for nondisabled 4 year old children to be more socially interactive than younger nondisabled and same-age children with delays may have contributed to the increased level of interaction (Guralnick & Groom, 1988).

Normally developing peers prefer to interact with other nondisabled peers (Guralnick & Groom, 1988; Jenkins et al., 1985; Odom & McEvoy, 1988). Nondisabled children will interact with peers that are developmentally delayed depending upon the level of delay or disability. Interactions with mildly delayed peers have been reported as more extensive than interactions with children that have moderate or severe delays or disabilities (Blacher-Dixon et al., 1981; Cole et al, 1991).

Interaction patterns of preschool children with delays have also been investigated according to classroom organization within integrated settings. Children with and without disabilities are found to differ in the amount of time they spend on a task and the amount of interaction they have with teachers and peers according to classroom setting and structure. Burnstein (1986) observed children during rug time, center time, and outdoor play. All settings varied in grouping, supervision, and teacher direction. The results indicate that children with delays require structured activities and teacher direction if academic and social interaction are to occur (Burnstein, 1986).

Social Interactions and Gross Motor Developmental Outcomes

Varied curriculum designs have been used to study the social interactions of preschool age children with developmental delays in integrated settings. The overall effect of integration is often examined by looking at children's performance on comprehensive developmental measures. A report of gross motor development may be found within these multidomain measures (Fewell, 1988). Few studies have compared integrated and segregated settings to examine educational or developmental gains (Fewell & Olewein, 1990).

A comparison group was used by Cooke et al. (1981) to investigate integrated and segregated environments and their effect on developmental outcomes. The results of this 3 year investigation found that children with developmental delays made comparable gross motor gains in both settings. Jenkins et al. (1989) examined the effect of two play treatments within integrated and segregated environments. An interactive play curriculum and a child-directed curriculum were implemented to determine their effect on the social interaction of preschool children with mild and moderate disabilities. Pre- and posttest measures were administered to examine performance across domains. The results of the Peabody Developmental Motor Scales (Folio & Fewell, 1983) indicated that neither the curriculum designs nor the settings produced significant changes in gross motor scores. These findings contradict what Jenkins et al. (1985) found in an earlier study. A communication model and a developmental model for preschool children in integrated and segregated classrooms were examined. Developmental outcomes were studied. Segregated classrooms scored significantly higher on the gross motor measure. But, the authors attribute this overall effect to the uncontrolled participation of selected

students in a physical therapy program. Without this confounding variable, the segregated classroom may not have shown gains.

Cole et al. (1991) implemented an academic curriculum and a cognitive curriculum in a preschool environment to examine the overall effect of integration. The researchers found no significant differences on pre- and posttest cognitive and academic measures for children in integrated and segregated environments. The motor component of the McCarthy Scales of Children's Abilities (McCarthy, 1972) indicated that children in integrated and segregated classrooms regressed between pre- and posttesting.

Examining group differences may not be sensitive enough to determine if important effects of integration exist. Cole et al. (1991) suggest that the effects of integration are complex and student profiles should be examined to evaluate outcomes. The authors examined initial levels of development for their influence on gains made in integrated or segregated environments. Children were randomly assigned to integrated special education classrooms (50/50 ratio) and totally segregated classrooms. As hypothesized, integration had no effect on the mean posttest performances of general developmental measures. But, when performing an aptitude-by-treatment analysis on a general cognitive measure and a language knowledge measure the authors found that higher functioning students made greater gains in the integrated setting and lower functioning students made greater gains in the segregated environment. The authors state that results may be attributed to peers preference to interact with children with mild developmental delays or to the level of instruction provided by the teachers in the integrated classroom which may have been more complex. It was demonstrated that detrimental effects of integration may be detected if only the results of developmental outcome measures are examined. Integrated environments should be closely monitored to be certain that lower functioning students are making progress toward designated goals. The subjective benefits of inclusion (e.g. attitudes, parent satisfaction) should balance with educational outcomes.

Time spent in an integrated environment was investigated by Fewell & Oelwein (1990) to determine the effect on developmental gains. The subjects in this study were children enrolled in The Model Preschool Program for Children with Down Syndrome and Other Developmental Delays. The program is one of the original programs funded by the HCEEP and extensive work has been done to develop replication sites (Fewell & Oelwein, 1991). Fifty-eight children with Down Syndrome and 77 children with other disabilities participated at the various study sites and were grouped according to their

time spent in an integrated classroom. The amount of time varied from no integration to 300+ minutes a week. A curriculum-based assessment, that included a gross motor component, was administered to determine the overall effect of integration. Group comparisons, non-Down Syndrome, Down Syndrome, and both groups, demonstrated that no significant difference in gross motor developmental outcomes were found for children spending similar amounts of time in the integrated settings. The Down Syndrome group had significant differences in expressive communication with higher scores found for the segregated group. A lower student/teacher ratio and emphasis on communication skills for the children with Down Syndrome in the segregated setting may account for the results. Interpretation of this large study must be made cautiously as many methodological problems existed including comparisons of non-equivalent groups.

Striefel, Killoran, & Quintero (1987; 1991) report effectiveness data for children with and without disabilities participating in the Functional Mainstreaming for Success model (FMS). This model is another project funded by the HCEEP (Striefel et al., 1991). Effectiveness data was compared for total reverse mainstreamed (nondisabled children brought into the segregated classroom), partial reverse mainstreamed and control groups on developmental measures. Gross motor outcomes show more gains made for all students in the total reverse mainstreamed setting. Children with mild to severe disabilities were integrated into this program on a full time basis. The program emphasized instruction that was individualized within the larger group and did not rely on one-to-one instruction unless required to assist a student find success.

The curriculum and quality of instruction provided to young children with developmental delays may have more of an impact on developmental outcomes than the makeup of the class (Bricker, Bruder, & Bailey, 1982; Fewell & Olewein, 1990; Odom & McEvoy, 1988; Peck & Cooke, 1983). Research indicates that heterogeneous groupings at the preschool level may enhance language and social development more so than gross motor (Jenkins et al, 1989).

Preschool Physical Education

Young children involved in an enriched environment have fundamental motor skills emerge as young as six years of age (Seefeldt, 1984). The gross motor skills

acquired at this age will be used for games and activities that children encounter as they get older (Seefeldt, 1984; Smith et al., 1991). Motor programs also contribute to quality of life as children get older (Gabbard, 1988). Practice and repetition will provide opportunities for children to become proficient and successful with their movements (Seefeldt, 1984).

Preschool age children require structured time to practice skills (Poest et al., 1990). Without guidance and the opportunity to practice children will have skills that are underdeveloped. Philosophical views of the value of gross motor activity for preschool age children will dictate the amount of time and structure provided to children to practice skills (Kelly et al., 1989). The physical activity patterns of preschool children participating in public and private preschools and day cares were assessed in a survey distributed to parents of 925 children and 65 teachers (Poest et al., 1989). Results indicate that children enrolled in nursery school participate in more large muscle activity than children in day care facilities and boys spend significantly more time in activity than girls (Poest et al., 1989). Physical activity was found to be seasonal and although a higher amount of time was spent during warmer seasons the level of intensity was questioned. Children left to direct their own activity score lower on motor development measures than children provided with structured activities to develop motor skills (Miller, 1978).

Preschool children without developmental delays will make gains in fundamental motor performance if provided quality gross motor programming with direct instruction (Kelly et al., 1989; van der Mars & Butterfield, 1988). A 12 week assessment-based preschool physical education program was implemented by Kelly et al. (1989) to assess the effect on fundamental gross motor skill development. Pre- and posttest scores on qualitative performance standards from the I CAN Program (Wessel, 1976) were used to evaluate progress. Significant gains were made by the experimental group, over the control group, on all skills tested. Children participating in the experimental group were screened with two standardized assessment tools and "... found to be free from any known cognitive or motor problems." (Kelly et al., 1989, p. 154). Classes were taught by certified physical education teachers. Instruction was provided to the experimental group 2 days per week for two 5-week segments. Each segment was followed by a week of assessment. Three fundamental gross motor skills were the focus for each 5-week block. The control group was informally screened with teacher-made checklists and were " ... free from any apparent cognitive or motor problems ..." (Kelly

et al., 1989, p. 154). No formal physical education instruction was provided to the control group. The children were provided with periods of free play on a daily basis. This time was supervised and held on a well equipped playground. Gains made by the experimental group support the benefit of structured physical education programs at the preschool level.

Gains in fundamental gross motor skill were found for preschool children participating in a structured program provided by preservice teachers (van der Mars & Butterfield, 1988). Treatment and control groups were from University day care programs. Both groups were pre- and posttested using the The Ohio State University Scale of Intra Gross Motor Assessment (Loovis & Ersing, 1979). Instruction for the treatment group was delivered in eight weekly sessions. Treatment group posttest scores revealed significant gains in 50% of the ten skills tested. Control group subjects participated in daily free play sessions but received no structured programming on the skills tested. No gains were found for the control group between the pre- and posttest period. Between group difference in posttest scores were significant for two of the skills. The authors state that small class size and absenteeism within the treatment group may have decreased potential gains and larger group sizes may have produced greater between group differences.

Generalizing results for both studies should be done cautiously. Although methodological limitations exist, the studies contribute to area not thoroughly investigated (Kelly et al., 1989).

Preschool Adapted Physical Education

Adapted physical education is delivered within a preschool special education curriculum to enhance gross motor development (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Preschool settings vary on their ability and intent to provide gross motor programming. Preschool special education administrators must be knowledgeable about the gross motor needs of preschool age children and qualified physical education programming should be provided to enhance motor development (Rimmer, 1990).

Rimmer & Kelly (1989) compared adapted physical education, occupational therapy, and a noninstructional program to evaluate their effect on the motor skill development of preschool children receiving special education services. Children were selected from three preschools and participation was limited to those with a

speech/language delay. Average class size was 10 and care was taken that groups were homogeneous. Program duration was 33-35 weeks and within group pre-posttest comparisons were made in each group using the I CAN Program (Wessel, 1976). The results of this investigation support structured, adapted physical education for preschool children with learning disabilities.

The literature indicates that structured physical education is beneficial for preschool children without developmental delays and children with learning disabilities to enhance gross motor development. Integrated environments, on the other hand, have not been shown to enhance gross motor development. Future research must begin to evaluate the benefit of structured gross motor programs across environments, including integrated settings, and their effect upon the gross motor development of preschool children with developmental delays.

CHAPTER III

METHODS AND PROCEDURES

This study was designed to examine the effect of an integrated adapted physical education setting on the motor performance of preschool children with developmental delays. Children were observed while participating in segregated and integrated conditions. The quality of motor skill performances were measured by recording: (1) the number of critical elements completed within validated skill sequences, and (2) the level of teacher assistance required to complete each performance. Locomotor (run and jump) and object control (throw and kick) performance standards were selected from the nationally validated I CAN program (Wessel, 1980). The skills selected for this study were developmentally appropriate and prerequisites for more complex motor skills (Kelly et. al., 1989; Rimmer & Kelly, 1989).

The ability to initiate and complete tasks, without excessive teacher assistance, is characteristic of the level of independence expected in kindergarten environments (Salisbury & Vincent, 1990). Children with developmental delays who are able to perform gross motor skills with minimal assistance will likely participate successfully in integrated kindergarten physical education environments.

Selection of Subjects

The subjects for this study were children from 3 to 5 years of age. Subjects that participated in this study were those eligible to receive early childhood special education services according to criteria established by the State of Oregon. They were: (1) experiencing a developmental delay, (2) met the criteria of a disabling condition, or (3) were determined to be at-risk for developmental delay in accordance with evaluation results, observations, medical reports, and parent information (OAR, 1992). In addition, the subjects participating in this study demonstrated a gross motor delay. The Test of Gross Motor Development (Ulrich, 1985) was administered to determine if a delay existed. Children with a Gross Motor Development Quotient of 1.5 standard deviations below the mean were eligible to participate in this study. Subjects were ambulatory, exhibited no severe behavior problems, and had no record of sensory

impairment that would require an alternative method of communication. Children participating in this study were free from any medical condition that would otherwise prohibit them from participating in the fundamental gross motor curriculum used in this study.

Subjects available for this study were enrolled in an ECSE Preschool classroom at a local elementary school. Four subjects that met the criteria were randomly selected to participate. Subjects that met the criteria to participate in this study had a parent or legal guardian sign an informed consent document. This signed document indicated that the information had been read and that the child was granted permission to participate in the study.

Approval to select subjects from the preschool classroom was granted by the Oregon State University Committee for the Protection of Human Subjects. This form is found in Appendix A. Appendix B contains the informed consent document that was signed by the parent or legal guardian of each subject. Permission to proceed with this research project was granted by the Corvallis School District.

Description of Subjects

Subject 1 was five years of age. He was eligible for ECSE services based upon his diagnosis of Down Syndrome and developmental delays according to skill assessment reports completed in the fall of 1992. Significant delays of more than two standard deviations below the norm were evident in cognitive functioning (SD= -2.33), social, emotional, or behavioral functioning (SD= -2.33) and self-help (SD= -2.33) according to results from the Battelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 1984). A gross motor developmental delay (SD = -2.00) was determined using the Test of Gross Motor Development (Ulrich, 1985).

Subject 2 was 3 years 11 months at the time of this study. He was eligible to receive ECSE services based upon skill assessment reports completed in the late summer and fall of 1992 that indicate developmental delays in two or more domains of learning. Delays in gross and fine motor functioning (SD = -2.33) were determined using the Peabody Developmental Motor Scales (Folio & Fewell, 1983). The gross motor delay was confirmed (SD = -2.33) with the Test of Gross Motor Development (Ulrich, 1985)

given at the beginning of this study. His delay in the area of self-help (SD = -2.33) was determined with the Battelle Developmental Inventory (Newborg et al., 1984).

Subject 3 was 4 years 7 months at the time of this study. His eligibility to receive ECSE services was based upon developmental delays in cognitive functioning (SD =-2.33), social, emotional, or behavioral functioning (SD = -2.33), and self-help (SD = -2.33) determined with the Battelle Developmental Inventory (Newborg et al., 1984) in the late summer of 1992. A gross motor delay was determined (SD = -1.67) using The Test of Gross Motor Development (Ulrich, 1985).

Subject 4 was 4 years 6 months at the time of this study. She was eligible to receive ECSE services based upon her developmental delays in two or more domains of learning. The following delays were determined using the Battelle Developmental Inventory (Newborg et al., 1984) administered in the summer of 1992: cognitive functioning (SD = - 1.75), social, emotional, or behavioral functioning (SD = -2.33), and self-help (SD = -2.33). A gross motor delay (SD = -2.00) was determined using the Test of Gross Motor Development (Ulrich, 1985) administered in the fall of 1992.

Instruments & Apparatus

Test Selection

The Test of Gross Motor Development (TGMD) (Ulrich, 1985) was administered to determine if a motor delay exists. The test was standardized for children 3-10 years of age. Validity and reliability data are well established and reported in detail in the test manual. Children in the ECSE classroom at this study site were formally tested with the TGMD as part of their Adapted Physical Education (APE) program. The principal investigator administered the test to all children. The test examiner was familiar with the content and standard procedure for the administration of the TGMD.

Project I CAN (Wessel, 1976), a curriculum-based assessment, was administered to each child in the ECSE classroom to assist with formulating Individualized Family Service Plan (IFSP) gross motor goals and for APE instructional planning. The I CAN Primary Skills program was designed for use in early childhood physical education programs (Wessel, 1976). Two locomotor skills (run and jump) and two object control skills (throw and kick) were selected as target skills for

instruction in the segregated and integrated conditions of this study. The critical elements of the mature pattern of each skill were used to evaluate motor performance quality. Project I CAN is a nationally validated program through the National Diffusion Network, U.S. Department of Education (Wessel, Holland, & Truax, 1987). Evidence for validity and reliability is reported in the literature for I CAN performance standards (Kelly et al., 1989).

Data Collection Sheet

Data collection sheets (developed by the investigator) were used to record data during segregated and integrated conditions (see Appendix C). The collection sheets were designed for event-sampling data. Each data sheet contains situational, performance, and summary data (Bailey & Wolery, 1989). Situational information includes: the subject identification number, skill to be observed, lesson letter, intervention condition, and session within week. Performance data for each attempt to perform a skill include the critical elements of each skill achieved and levels of assistance data. Summary data were calculated for each dependent measure. For each skill, a mean number of critical elements observed, standard deviation, and range were summarized. Levels of assistance were numerically weighted from the least to most prompt utilized. Full physical assistance to complete a skill received a score of "1" and complete independence in the performance received a score of "6". Level of assistance was summarized with a mean score and standard deviation for each skill.

Apparatus

The video equipment used in this study was a Panasonic video camera, model 150-EL. Fifteen standard one-half inch videocassette EGT-120 were used to record all data. Segregated and integrated conditions were recorded on separate tapes.

The equipment used for each lesson is listed on each lesson plan (see Appendix E). The equipment remained the same each time the lesson was presented. When possible, equipment per student ratio was the same during segregated and integrated conditions. This was done to provide equal opportunities for practice, in both conditions. The equipment and lesson activities were designed to be age-appropriate and motivational for preschool children with and without developmental delays.

Procedures

Classroom setting

All classes were held in the multipurpose room at Garfield Elementary School. The room measured 60 X 40 feet (59' 7" X 39' 4") with a linoleum floor. There were 12 mercury lights suspended from a 20' ceiling. The room serves as a cafeteria but for the adapted physical education time the space was clear of any tables or chairs. For this study, classes were held 4 times a week. The class period ran from 9:20 a.m. to 9:50 a.m. The teacher/student ratio was approximately 1:4 for integrated and segregated conditions. Motor skill lessons were developed for 2 locomotor and 2 object control skills. Each lesson was carefully designed for practice on the targeted skill performance objective. The activities were intended to be child-directed and assistance provided only as needed. Two lessons plans were written for each performance objective so activities remained somewhat novel at each presentation (see Appendix E). Prior to data collection, the lesson plans were introduced to the class once to familiarize them with materials used to practice specific performance objectives and to be certain they were appropriate for the group of subjects in this study.

Locomotor (run and jump) and object control (throw and kick) skills were presented in a random order during segregated and integrated conditions (see Appendix D). Each skill was presented 3 times throughout each condition. Lesson plan "A" or "B" was randomly selected for each presentation.

Class schedule

The adapted physical education (APE) class schedule was the same for segregated and integrated conditions. Children participating in the study were familiar with the APE class format. A warm-up activity was done for 5 minutes at the beginning of each class. Six warm-up activities were designed and randomly selected for presentation on each day. Locomotor skill practice followed each warm-up. Locomotor time lasted for 10 minutes. Locomotor target skills were embedded within an obstacle course. Children had the opportunity to practice and receive instruction on targeted locomotor skills (run or jump) as they moved through the obstacle course. Tasks within the course were designed to accommodate varying ability levels. An object control lesson was presented at the opposite end of the activity room for 10 minutes following locomotor time.

Activities were designed to facilitate practice on targeted object control skills (throw or kick). Play skill time was held in the final 5 minutes of every class.

Class Conditions

Segregated and integrated class conditions were used in this study. During the segregated APE condition, children with developmental delays attended APE classes without peer models. The class schedule remained the same throughout the condition. The warm-up, locomotor, object control, and play activities varied according to the random selection processes previously described.

During the integrated APE condition, children with and without developmental delays participated in activities together. The children without delays, in this study, attended the ECSE preschool classroom each day. This site was chosen for their preschool experience by parents or guardians. All peer models attending this preschool were screened and approved by the classroom teacher. Children without developmental delays served as "proximity models" (Jenkins et al., 1985) in the APE setting. Occasionally the models were asked to demonstrate a skill but it was unplanned and only at the discretion of the APE instructor, classroom teacher, or paraprofessional. A peer model was chosen to demonstrate a skill if they were able to appropriately perform the skill. This model was considered a higher prompt than the teacher model on the levels of assistance scoring.

The class schedule remained the same throughout the integrated condition. The warm-up, locomotor, object control, and play activities were the same as presented in the segregated condition. They were repeated according to the random selection procedure.

Instructors

The APE instructor was a second year master's degree student in the Movement Studies for the Disabled program at Oregon State University. The instructor had assisted with the preschool APE model for three terms and taken primary teaching responsibility for two terms. The instructor had experience using the I CAN Primary program for assessment, prescription, instruction, and evaluation.

The classroom teacher and paraprofessional assisted the APE instructor. The teacher and paraprofessional were asked to use a system of increasing assistance

(Demchak, 1990) to support each child's attempt to complete a targeted performance objective. They were asked to cover a "zone" (LeLaurin & Risley, 1972) during activities versus providing continual one-to-one assistance. During the locomotor obstacle course a "zone" would mean a corner of the course or a trouble spot where children may require more assistance (e.g. the balance beam). Every effort was made to be certain that "zones" were near the portion of the course that included practice on the targeted objective to be sure assistance was provided as required. A "zone" in the object control lesson focus was an area on either side of the target. This placement provided a view of all children and an opportunity to provide assistance as required. The teachers and paraprofessionals were familiar with the activity-based approach (Bricker & Cripe, 1992) used in the adapted physical education class. The same approach was used in the classroom setting. They were familiar with the equipment arrangement, performance objectives, and performance standards for each target skill being evaluated. An enlarged checklist of the locomotor and object control critical elements were taped to the wall during each session for the purpose of instruction and assistance.

Data collection

Each session was filmed by the principal investigator. Filming began after the warm-up activity was completed. Filming was done from the perimeter of the activity area. Familiarization with the camera was done for 2-3 weeks prior to data collection. Children were randomly placed in five minute filming segments for two skills (see Appendix D). The following skills were randomly selected for each subject: Subject 1 the run and kick; Subject 2 the run and throw; Subject 3 the jump and throw; and Subject 4 the jump and kick. All children were scheduled to be filmed for 120 minutes (24 sessions). Each child was scheduled for 30 minutes (6 sessions) in the first segregated APE condition and 30 minutes (6 sessions) in the first integrated APE condition. The segregated and integrated conditions were repeated once and each child was filmed practicing the same skills. The data included a maximum of 15 minutes of locomotor skill practice (run, jump) and 15 minutes of object control skill practice (kick, throw) within each condition.

Observers

The investigator observed and recorded data from the filmed sessions to the data sheets. Each time a child attempted a targeted motor skill, the quality of the performance was recorded. Critical elements observed in each performance were

tallied. The level of assistance was determined based upon visual, auditory, or physical prompting and recorded according to guidelines established.

Observer reliability

The consistency with which the quality of each performance was recorded from the filmed sessions was evaluated with intra- and interobserver agreement scores. Intraobserver agreement was completed on 25% of all data (Cooper, Heron, & Heward, 1987). Twenty-four five minute sessions were randomly selected across conditions, skills and subjects. Percentage of agreement between the two observation occasions was computed by dividing the agreements by agreements plus disagreements and multiplying by 100 (van der Mars, 1989). Interobserver agreement was completed on 25% of the data collected in the study. The observer was trained on each skill and remained blind as to the condition being evaluated. Percentage of agreement data was computed for each skill before continuing to be certain that agreement was 90% or higher.

Experimental Design

The objective of this research was to examine the effect of an integrated adapted physical education setting on the motor performance quality of preschool children with developmental delay(s). A single subject reversal design (A-B-A-B) was used in this investigation. Condition lengths were set a priori for this study (Hersen & Barlow, 1976). Six sessions were scheduled in each condition. This was done to accommodate the need to complete the proposed study within the elementary school schedule and for subjects to have an equal number of data points to represent motor performance. An extra session was added in a condition if make-up time for missed sessions was required. An effort was made to obtain 6 summary data points for each child within each condition. Three data points per condition for each child were accepted as a minimum to determine the trend direction and stability of the data.

Baseline data (A1) was taken during the segregated class condition. The integrated condition (B1), was introduced immediately after the baseline and continued for the same length of time as the A1 condition (Gast & Tawney, 1984). A withdrawal of the intervention condition (B1) and return to baseline (A2) occurred after 6 sessions. Baseline phase A2 was followed by the intervention condition B2 to complete the study.

Data Analysis

Summary data were used to examine the effect of participation in an integrated APE setting on the quality of a child's motor performance. Mean and standard deviation by session were used for each dependent variable. The mean scores for each dependent measure were graphed. A within condition analysis was completed by calculating the level of stability for each session using mean scores. A stability criterion of 15% was established to calculate the acceptable stability range for all within condition analyses (Tawney & Gast, 1984). A condition was considered stable if 85-90% of the data fell within the range. A visual analysis of the data was completed to determine level change patterns within each condition.

A between condition analysis was completed to determine if a change in level had occurred. The last and first summary mean scores of each condition were examined. A change in level from condition A1 to condition B1, for the dependent measures, demonstrated an intervention effect. To establish experimental control, the data were expected to return to the baseline level when the intervention was withdrawn. The internal validity of the study was strengthened if the same effect was repeated when the intervention (B2) was repeated.

To further analyze the data, each locomotor skill and each object control skill were grouped by condition to examine the overall trend direction and stability of the data. The trend direction was calculated using a split-middle method (Tawney & Gast, 1984). This method relied on median values to estimate trend direction. Data patterns were described as accelerating, decelerating, or having a zero celeration line. The split-middle line of progress was used, with the appropriate stability range, to determine trend stability. A trend was considered stable if 85-90% of data points fell within the range.

The analysis of the data were expected to demonstrate that an integrated setting was as educationally beneficial as a segregated setting for the performance of gross motor skills. If this is the case the number of critical elements completed for locomotor and object control skills should be equal for both conditions or an improvement should be seen in condition B1 and B2. The mean level of assistance should remain the same between conditions or decrease in the integrated setting. These results would

demonstrate that children were as independent or more independent in integrated settings.

CHAPTER IV

RESULTS

All four subjects selected to participate in this investigation completed the study. The duration of the study included 25 sessions spanning 8 school weeks. A total of 91, five minute sessions were filmed and analyzed with 1,468 trials of skill practice used to compile the final results. Data were visually analyzed from video recorded sessions of each subject performing locomotor and object control skills in each condition. Each subject was scheduled to be filmed for 24 sessions. Subjects were in attendance for filming 83-100 percent of the scheduled sessions.

An analysis of the data within condition and between condition was completed for each subject. All attempts to practice a skill were recorded on data sheets for analysis unless the trial was (1) not performed at the established criterion distance (found at the top of each data sheet) or in response to a teacher direction to perform the skill, (2) blocked from view by equipment, a peer, instructor, or paraprofessional, or (3) the child moved quickly to a new location and the camera was not able to capture the entire trial. The quality of motor performance within each session was summarized with mean scores and standard deviations. Mean scores were used to determine level of stability for each session. A between condition analysis was completed by examining and comparing summary score means and standard deviations of all conditions. A visual analysis of level change between conditions was completed. The overall effect of condition on quality of motor performance was analyzed by grouping segregated and integrated sessions and calculating the estimated trend direction and stability of the data.

One purpose of this investigation was to determine the effect of condition on the quality of a child's gross motor skill performance. A formal pre- and posttest assessment was completed to be certain that changes in gross motor skill performance were not attributed to learning over time. Subjects participating in this study and peer models participating during integrated conditions were pre- and posttested using the Test of Gross Motor Development (Ulrich, 1985). The Gross Motor Development Quotients (GMDQ), found in Table 4.1, demonstrate that subjects participating in this study remained stable in their performance of locomotor and object control skills

throughout the course of this study. Peer model GMDQ scores also remained stable between pre- and posttesting (see Table 4.1).

Table 4.1

Gross Motor Development Quotients (GDMQ)[a]

Students	Pretest		Posttest	
	GMDQ	z-score	GMDQ	z-score
Children with developmental delays				
Subject 1	55	-3.00	55	-3.00
Subject 2	64	-2.33	64	-2.33
Subject 3	76	-1.67	76	-1.67
Subject 4	70	-2.00	70	-2.00
Peer Models				
1	82	+1.00	82	+1.00
2	136	+2.33	130	+2.00
3	130	+2.00	133	+2.00
4	142	+2.67	145	+3.00

[a] GMDQ from the Test of Gross Motor Development (Ulrich, 1985)

Reliability

Intraobserver reliability

Intraobserver reliability was completed on a random sample of 25% of the data collected in this study. Twenty-four sessions were reviewed and percent agreement computed for each dependent variable. Percent agreement results for the number of critical elements achieved in each subject's attempt to complete a skill and the corresponding level of assistance utilized to complete the attempt are reported in Table 4.2. The mean percent agreement for the number of critical elements achieved was 92% with a standard deviation of 9% and range of 66-100%. The mean percent for the level of assistance utilized to complete each attempt was 97% with a standard deviation of 5% and range of 83-100%.

Interobserver reliability

Interobserver reliability was completed for a random selection of 25% of the data collected in this study. Twenty-four sessions were reviewed and percent agreement computed for each dependent variable. Percent agreement results for the number of critical elements achieved in each subject's attempt to complete a skill and the corresponding level of assistance utilized to complete the attempt are reported in Table 4.3. The mean percent agreement for the number of critical elements achieved was 94% with a standard deviation of 6% and range of 79-100%. The mean percent for the level of assistance utilized to complete each attempt was 94% with a standard deviation of 7% and range of 75-100%.

Table 4.2

Intraobserver Reliability Percent Agreement

Skill/Condition[a]/Subject	% Agreement Critical Elements	% Agreement Assistance Level
Throw/A1/2	100	100
Throw/B1/2	100	95
Throw/A1/2	96	100
Throw/A1/3	100	86
Throw/B1/3	91	100
Throw/B2/3	89	96
Kick/A1/4	96	97
Kick/A2/4	100	100
Kick/B2/4	96	96
Kick/A1/1	86	86
Kick/A2/1	95	100
Kick/B2/1	93	93

Table 4.2 continued

Skill/Condition[a]/Subject	% Agreement Critical Elements	% Agreement Assistance Level
Run/A1/2	100	83
Run/B1/2	75	100
Run/B2/2	100	100
Run/A1/1	83	100
Run/A2/1	100	100
Run/B2/1	66	100
Jump/A1/4	81	100
Jump/B1/4	81	100
Jump/B2/4	92	100
Jump/A1/3	97	97
Jump/B1/3	94	100
Jump/A2/3	97	93

[a] Four conditions represented in the study: A1= first segregated; B1= first integrated; A2=second segregated; B2=second integrated

Table 4.3

Interobserver Reliability Percent Agreement

Skill/Condition[a]/Subject	% Agreement Critical Elements	% Agreement Assistance Level
Throw/A1/2	100	100
Throw/B1/2	82	96
Throw/B2/2	90	83
Throw/B1/3	96	96
Throw/A2/3	98	100
Throw/B2/3	93	96
Kick/A1/4	93	93
Kick/A2/4	89	89
Kick/B2/4	94	94
Kick/A1/1	93	93
Kick/B1/1	85	100
Kick/A2/1	100	90

Table 4.3 continued

Skill/Condition[a]/Subject	% Agreement Critical Elements	% Agreement Assistance Level
Run/B1/2	100	100
Run/A2/2	100	83
Run/B2/2	100	100
Run/A1/1	100	100
Run/B1/1	100	75
Run/A2/1	100	100
Jump/A1/3	79	90
Jump/B1/3	86	91
Jump/A2/3	94	100
Jump/A1/4	94	100
Jump/B1/4	93	96
Jump/A2/4	94	100

[a] Four conditions represented in the study: A1= first segregated; B1= first integrated; A2=second segregated; B2=second integrated

Subject Analysis

Subject 1

Subject 1 was filmed participating in 24 sessions during this investigation. He completed 12 sessions of the run (see Table 4.4) and 12 sessions of the kick (see Table 4.5). Each session was analyzed to determine the quality of his motor performance in segregated and integrated adapted physical education settings.

Run

Subject 1 remained consistent with the quality of his run performance within each condition. The majority of his performances were achieved with one critical element (knees bent). The use of a second critical element, elbows bent, was an emerging component of his performance and was demonstrated in a small percentage (21%) of his attempts. Within condition critical element scores greater than one, found in Table 4.4, indicate that elbows were included in his performance. No other critical elements were observed in any of his attempts. The level of stability within each condition was 100% with the exception of condition A2 & B2 (33%) in which the data were variable. The majority of attempts were performed independently or with a verbal prompt. Modeling with verbal prompting by the teacher and/or peer were observed only in condition B1.

The mean number of critical elements achieved by Subject 1 within each condition for the run was consistent (see Figure 1). Level changes between conditions were minimal. One critical element was achieved in the majority of his attempts with the emergence of a second critical element pushing the mean slightly higher in the A2 condition. The mean level of assistance between conditions A1 and B1 decreased (see Figure 2). However, the level of independence increased with the move back to the segregated condition and remained consistent for the final integrated condition.

Figure 3 provides a comparison of the critical elements achieved in segregated and integrated sessions for Subject 1. Using the split-middle method (Tawney & Gast, 1984) a trend in the direction of his data pattern was found to be decelerating and remained variable (50% stability) in the segregated sessions. In the integrated sessions 83% of the data were determined to be stable. The level of assistance data exhibit an accelerating trend in both conditions (see Figure 4).

Table 4.4

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Run: SUBJECT 1

Session	No. of Attempts		Critical Elements[a]		Assistance Level[b]	
	analyzed	N/A	M	SD	M	SD
Segregated (A1)						
1	6	0	1.0	.00	6.0	.00
2	6	0	1.3	.80	5.7	.52
3	7	0	1.3	.76	5.3	.49
Integrated (B1)						
1	4	0	1.0	.00	5.0	.82
2	4	0	1.0	1.2	5.3	.50
3	4	0	1.0	.00	4.5	1.0

Table 4.4 continued

Session	# of attempts analyzed	# of attempts N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	4	0	1.5	.58	5.3	.50
2	3	0	1.0	.00	6.0	.00
3	5	0	.60	.55	5.4	.55
Integrated (B2)						
1	3	0	1.0	.00	5.7	.58
2	3	0	1.0	.00	5.3	.58
3	3	0	.67	1.2	5.7	.58

[a] Five possible critical elements in performing the run (bend knee, foot placement, heel-toe, arms in opposition, elbows bent)

[b] Six possible levels of assistance as outlined in operational definitions

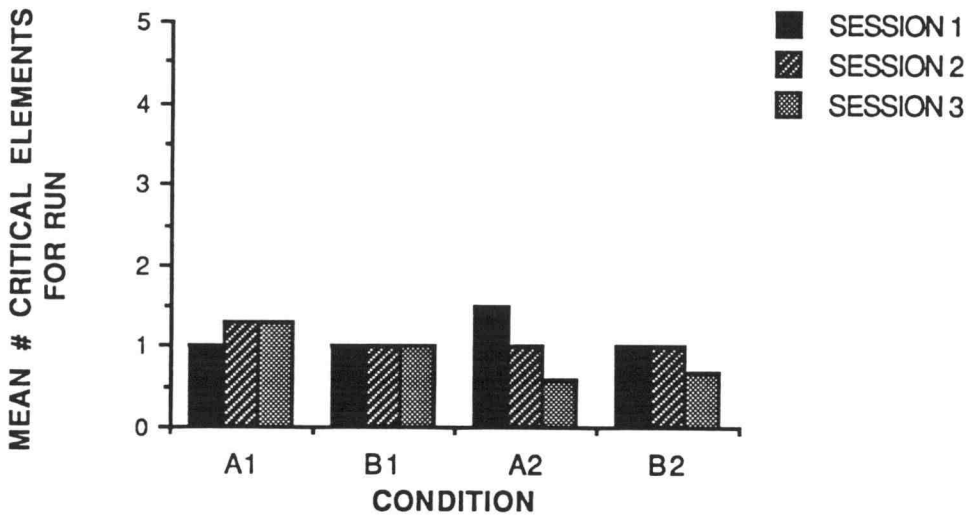

Figure 1. Number of critical elements achieved for the run - Subject 1 (Critical elements-bend knee, foot placement, heel-toe, arms in opposition, elbows bent).

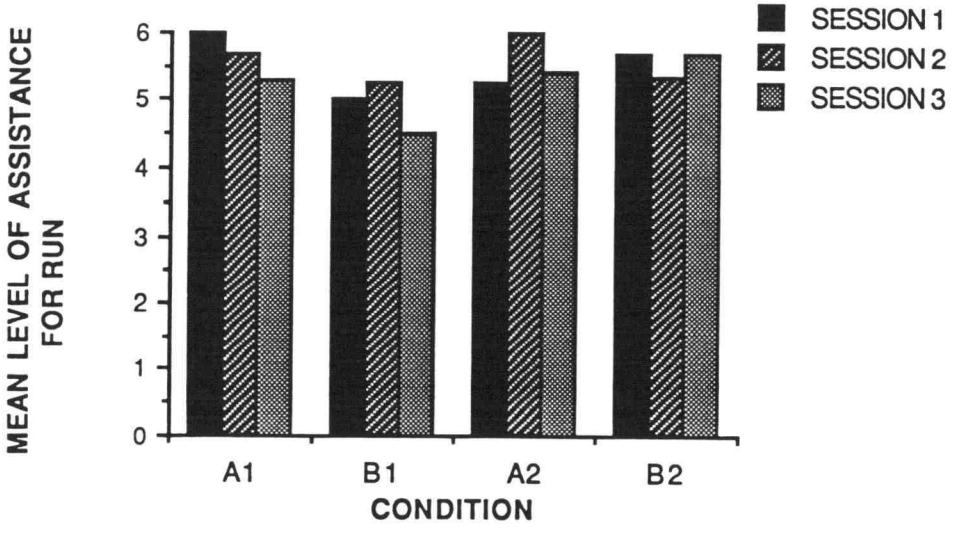

Figure 2 Level of assistance for the run - Subject 1 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

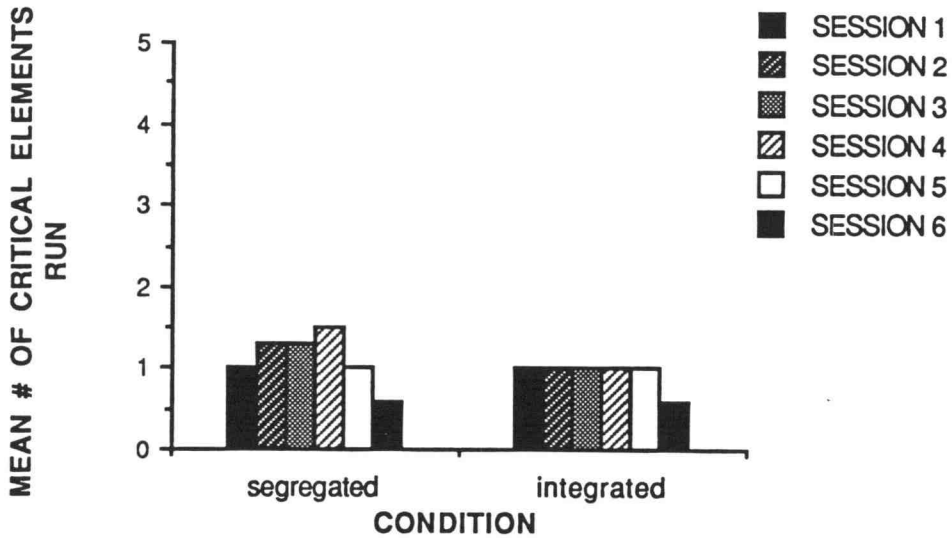

Figure 3 Number of critical elements for grouped conditions -Subject 1 (bend knee, foot placement, heel-toe, arms in opposition, elbows bent)

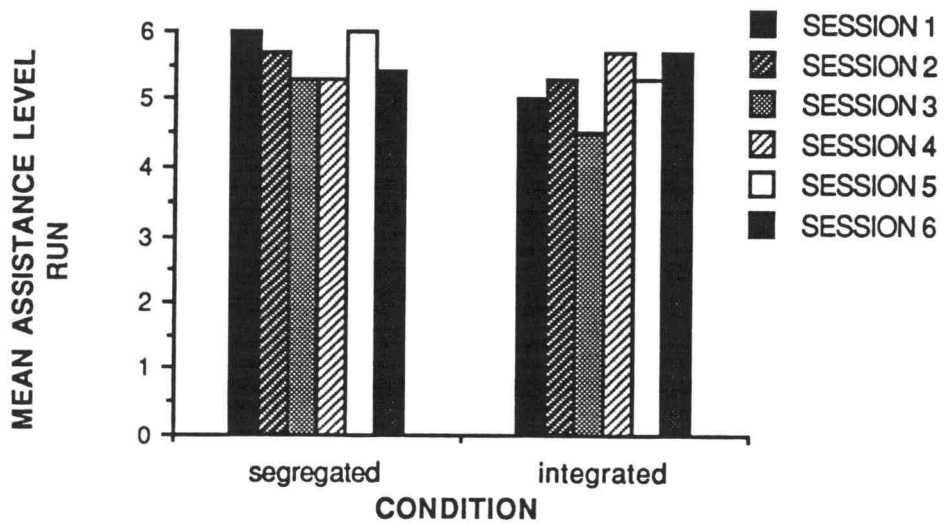

Figure 4 Level of assistance for grouped conditions - Subject 1 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Kick

Subject 1 performed 146 trials of the kick that could be analyzed throughout the course of this study (see Table 4.5). Seventy-six percent of his trials were completed with two critical elements present in the performance. He was consistently able to kick the center of the ball with his foot and follow through to the target with his leg. A very small percentage (3%) of his trials were observed to include a third critical element. This emerging element was either a step with the nonkicking leg, just prior to ball contact, or the use of an arm in opposition to assist with balance. All conditions remained very stable (100%) for Subject 1 with the exception of condition A2 where only 66% of the data points fell within the acceptable stability range. The variability in mean values for condition A2 may be attributed to the structure of the lesson used for the second session. The students were asked to kick at suspended bottles in the final 30 seconds of class. Subject 1 performed six trials, in the last 15 seconds, with a leg follow through as the only element observed in his performance.

The mean level of assistance within each condition remained consistent (100%). Seventy percent of all attempts made to kick an object were completed independently within each condition. Verbal prompting was utilized for 60% of the trials attempted in session 2, condition B2. This was the maximum amount of verbal prompting required within any of the conditions (see Table 4.5).

Level changes between conditions were minimal for Subject 1. The level from condition A1 to B1 increased slightly ($\underline{M}$=1.8 to $\underline{M}$=1.9) as shown in Figure 5 but then decreased to a value of $\underline{M}$=1.8 in A2 and remained consistent in B2. The mean level of assistance utilized by Subject 1 remained consistent as he moved across conditions. His biggest level change was the increased independence in the move from condition A2 to B2 ($\underline{M}$=5.5-$\underline{M}$=5.9) (see Figure 6).

Figure 7 provides a comparison of the mean number of critical elements Subject 1 used in segregated versus integrated conditions. An analysis of trend direction reveals a decelerating pattern in both the segregated and integrated conditions. However, a close look at the final session of each condition reveals an upward trend in the data. Trend stability in the segregated condition was variable (33% stability) while in the integrated condition his performance was stable (100%).

A slight acceleration in the slope of the data for the mean level of assistance in all segregated sessions for Subject 1 may be seen in Figure 8. Although this overall pattern in the data was calculated, the trend in the last session is decelerating. The integrated sessions reveal a decelerating trend direction but the last data pattern is accelerating (see Figure 8). A stable trend was found in both summary conditions.

Table 4.5

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Kick: SUBJECT 1

			Segregated (A1)			
			Critical Elements[a]		Assistance Level[b]	
Session	No. of Attempts		M	SD	M	SD
	analyzed	N/A				
1	14	0	2.0	.55	5.9	.36
2	20	1	1.6	.60	5.6	.50
3	7	0	1.9	.90	5.7	.49
			Integrated (B1)			
1	17	0	1.8	.39	5.6	.51
2	11	2	2.0	.00	5.8	.40
3	11	0	1.9	.30	5.8	.40

Table 4.5 continued

Session	No. of Attempts analyzed	N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	10	0	2.1	.32	5.8	.42
2	19	2	1.4	.61	5.8	.42
3	8	1	2.0	.00	5.5	.53
Integrated (B2)						
1	7	1	1.7	.49	5.9	.38
2	10	0	1.7	.67	5.4	.52
3	12	2	1.9	.51	5.8	.45

[a] Five possible critical elements in performing the kick (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through)

[b] Six possible levels of assistance as outlined in operational definitions

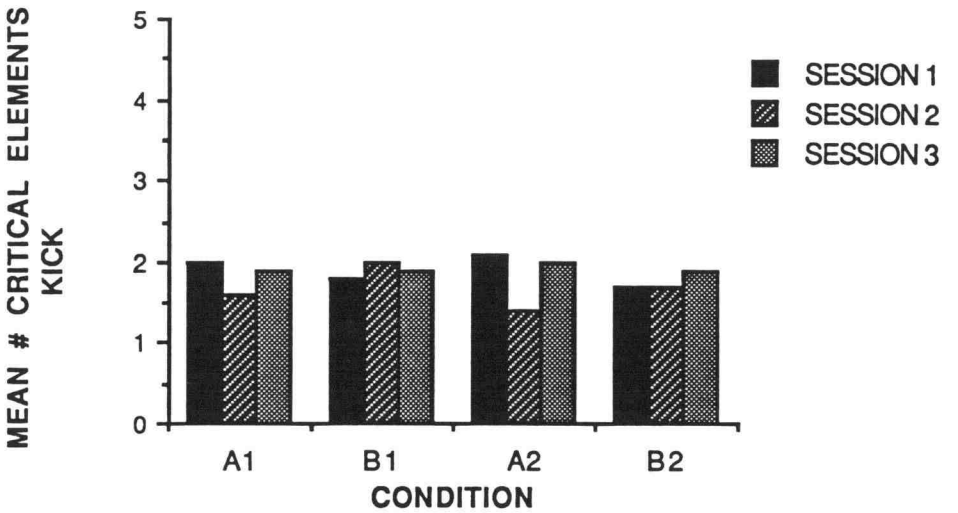

Figure 5. Number of critical elements achieved for the kick - Subject 1 (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through).

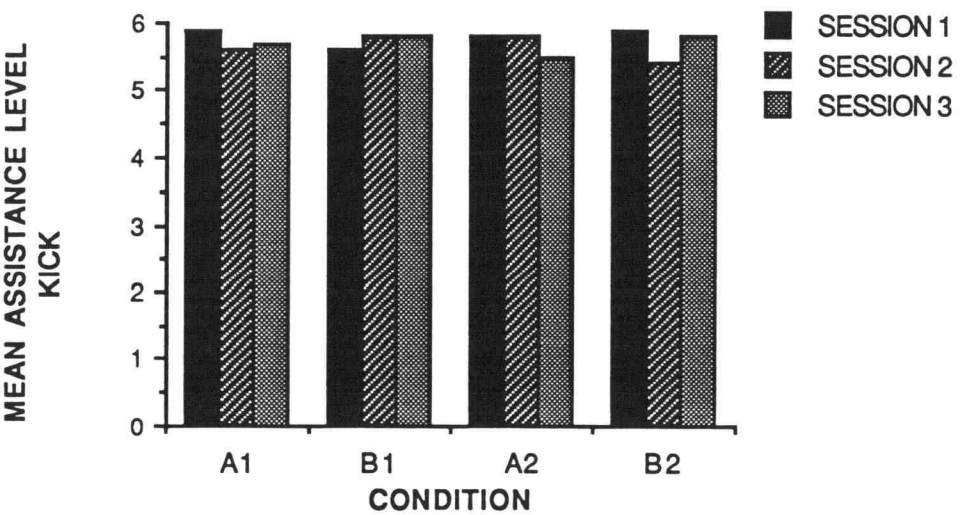

Figure 6. Level of assistance for the kick - Subject 1 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

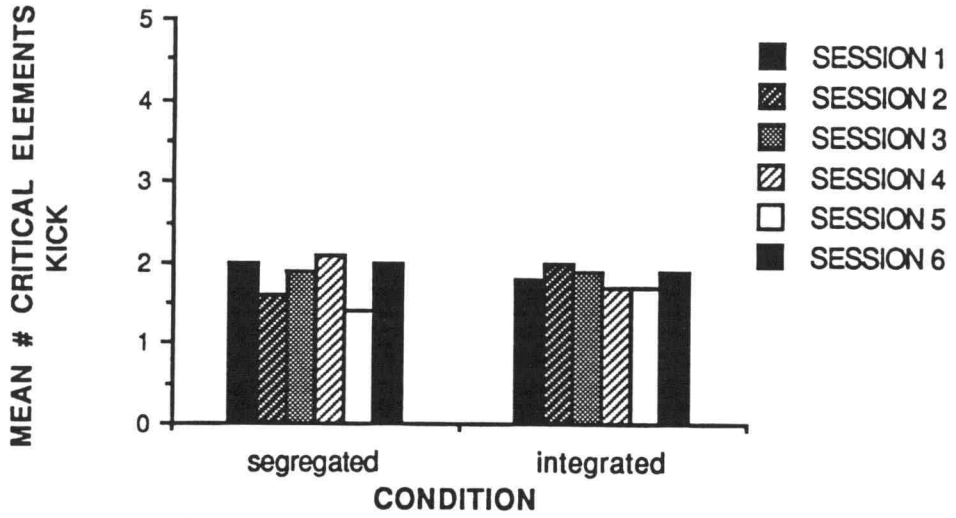

Figure 7. Number of critical elements for group conditions - Subject 1 (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through).

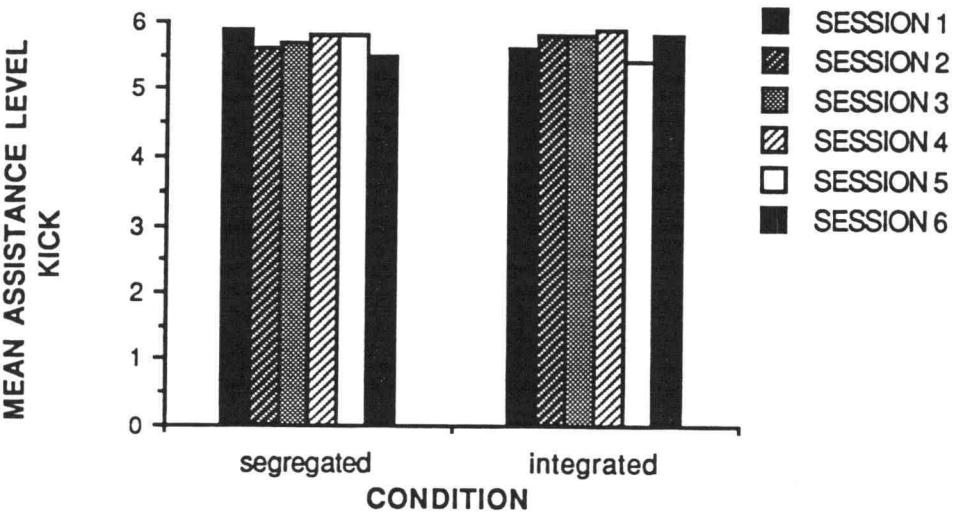

Figure 8. Level of assistance for grouped conditions - Subject 1 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Subject 2

Subject 2 was filmed in 23 sessions for this investigation. He completed 12 sessions of the run (see Table 4.6) and 11 sessions of the throw (see Table 4.7). Each session has been analyzed to determine the quality of his motor performance in segregated and integrated settings.

Run

Sixty trials of the run were analyzed for Subject 2 (see Table 4.6). The majority (77%) of attempts to perform the run included one critical element. He consistently ran with elbows bent. The use of arms in opposition while running was demonstrated on two occasions, B1 and B2 conditions. The critical elements performed by Subject 1 maintained a stable (100%) level in condition A1. However, variability was demonstrated in condition B1, A2, and B2 with levels equaling 33%, 66%, and 33%, respectively. The variability seen in the integrated conditions may be a result of the emerging use of arms in opposition which increased the mean level of critical elements observed in the performance.

The mean level of assistance utilized by Subject 2 remained stable (100%) within each condition. His level of independence was greatest in condition A1. His use of verbal prompting was greatest in A2 (58% of prompting was verbal) and he made use of verbal prompting with a teacher model in this condition. The integrated conditions were stable with a slight increase in the amount of independence demonstrated in condition B2 (see Table 4.6). A verbal prompt with model by a peer was utilized in condition B2.

Level changes from one condition to the next were minimal for Subject 2. He demonstrated a slight decrease ($\underline{M}$=.2-$\underline{M}$=.3) in the number of critical elements with each move from a segregated to an integrated condition (see Figure 9). Summary means for each condition were .8 with the exception of condition A2 which was slightly higher at .9. The change in level of assistance remained the same or increased slightly from segregated to integrated conditions (see Figure 10). The only decreased level change was demonstrated when Subject 1 moved from the B1 condition to the A2 condition ($\underline{M}$=5.3-$\underline{M}$=4.3 respectively).

An analysis of trend direction and stability for the mean number of critical elements for Subject 2 in all segregated sessions reveals a slight acceleration in the data

pattern that was stable (see Figure 11). The integrated sessions demonstrate a decelerating trend direction that is variable (33% stability). A close examination of Figure 11 reveals an accelerating trend in the last integrated session.

A zero celeration pattern was found in both the segregated and integrated conditions when the mean level of assistance was analyzed (see Figure 12). The trend stability in the segregated condition was more variable (83%) than the integrated condition (100%).

Table 4.6

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Run: SUBJECT 2

			Critical Elements[a]		Assistance Level[b]	
Session	No. of Attempts		M	SD	M	SD
	analyzed	N/A				
Segregated (A1)						
1	7	0	.71	.49	6.0	.00
2	6	0	.83	.41	5.2	.41
3	5	0	1.0	.00	5.8	.45
Integrated (B1)						
1	4	0	.80	.50	5.8	.50
2	4	0	1.3	.50	5.3	.50
3	4	0	.50	.58	5.3	.50

Table 4.6 continued

Session	No. of Attempts		Critical Elements[a]		Assistance Level[b]	
	analyzed	N/A	M	SD	M	SD
Segregated (A2)						
1	6	0	.70	.52	4.3	1.0
2	6	0	1.0	.00	5.2	1.2
3	5	0	1.0	.00	5.6	.55
Integrated (B2)						
1	6	0	.70	.52	5.7	.82
2	4	0	.50	.58	5.3	.50
3	3	1	1.3	.58	5.7	.58

[a] Five possible critical elements in performing the run (bend knee, foot placement, heel-toe, arms in opposition, elbows bent)

[b] Six possible levels of assistance as outlined in operational definitions

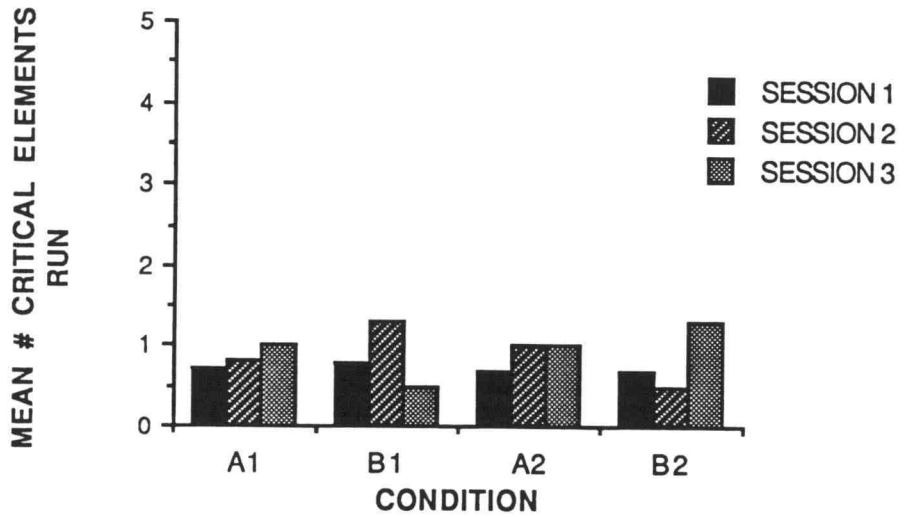

Figure 9. Number of critical elements achieved for the run - Subject 2 (bend knee, foot placement, heel-toe, arms in opposition, elbows bent)

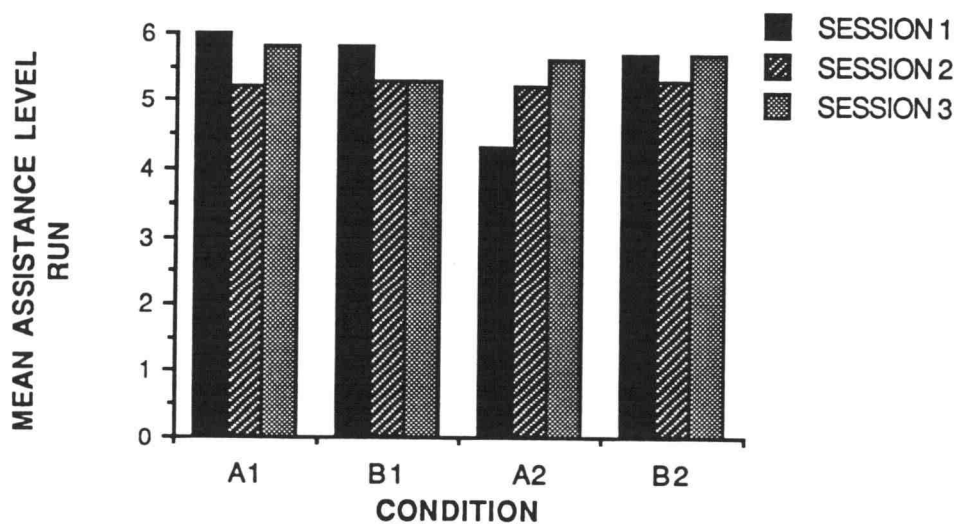

Figure 10. Level of assistance for the run - Subject 2 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

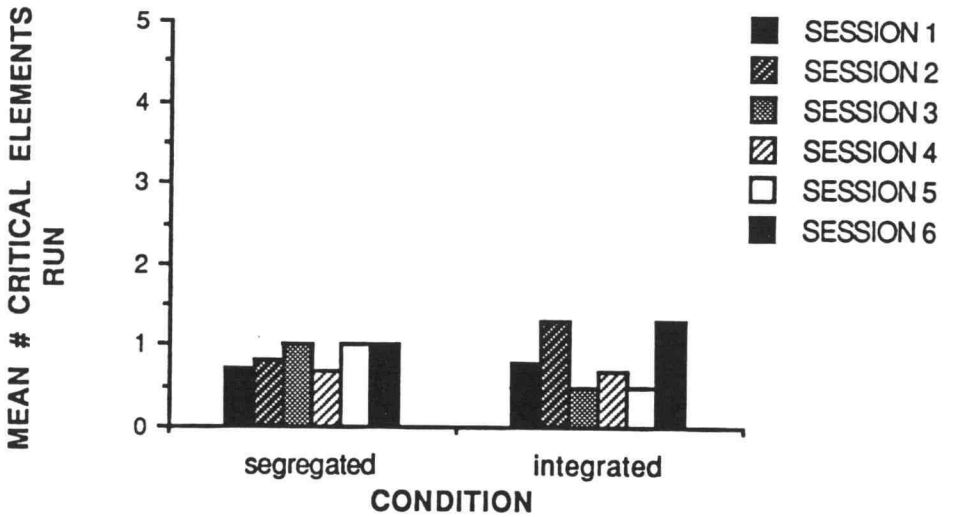

Figure 11. Number of critical elements for grouped conditions - Subject 2 (bend knee, foot placement, heel-toe, arms in opposition, elbows bent)

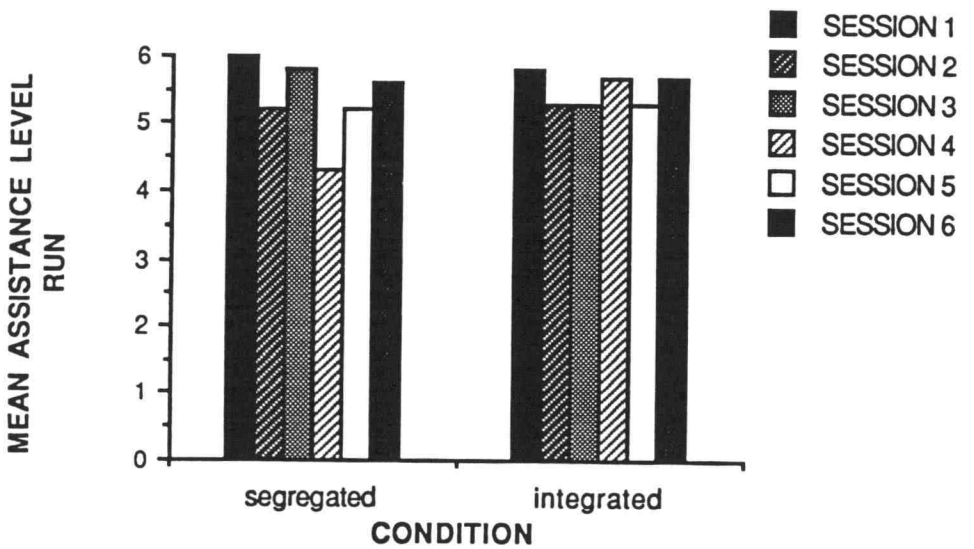

Figure 12. Level of assistance for grouped conditions - Subject 2 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Throw

Subject 2 attempted 223 throws during this investigation and 214 were analyzed (see Table 4.7). The quality of his performance consistently included one critical element. He demonstrated the throw using a follow through with his hand toward the target. The mean number of critical elements remained stable (100%) within conditions. The emergence of a second critical element was infrequent (2% of the trials analyzed). The mean level of assistance also remained stable (100%) within all conditions. Subject 2 was able to throw independently for 81% of all conditions. His greatest need for assistance was during condition A2, the third session. He utilized a verbal prompt with a teacher model for four trials in that session. With each of those prompts he was able to maintain his performance with one critical element.

Subject 2 remained consistent when moving into a new condition. The only level change observed was between condition A2, session 3 and condition B2, session 1 (see Figure 13). This increase in level remained consistent for the duration of condition B2. The summary scores for all sessions in condition B2 was .2 higher ($\underline{M}$=1.1 versus $\underline{M}$=.9) than all other condition summary means. In the final condition shift (A2-B2) a level change was also observed in the level of assistance utilized ($\underline{M}$=5.2-$\underline{M}$=5.7) (see Figure 14). Summary scores were consistent ($\underline{M}$=5.7) in each condition with the exception of condition A2 where he demonstrated a slightly higher level of independence ($\underline{M}$=5.9).

The data pattern in segregated sessions demonstrated a slight acceleration (see Figure 15). The stability was calculated at 80% (variable). This overall variability results from two trends within the data. Overall, the integrated data pattern had a zero celeration line and stable trend (100%). But, examination of the B2 condition revealed a slope in the data that was accelerating for the mean number of critical elements completed in his performance.

The level of assistance utilized in the segregated conditions maintained a zero celeration line and stable trend (100%) (see Figure 16). Condition A1 data were accelerating while condition A2 data were decelerating. The integrated conditions reveal an accelerating trend direction and stable data pattern (100%).

Table 4.7

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Throw: SUBJECT 2

Session	No. of Attempts		Critical Elements[a]		Assistance Level[b]	
	analyzed	N/A	M	SD	M	SD
Segregated (A1)						
1	11	2	1.1	.30	5.5	.52
2	4	4	.80	.50	5.9	.35
3	N/A		N/A		N/A	
Integrated (B1)						
1	26	1	.80	.43	5.9	.27
2	21	0	1.0	.00	5.9	.30
3	23	0	.90	.29	5.8	.40

Table 4.7 continued

Session	No. of Attempts analyzed	N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	23	0	.90	.63	5.9	.34
2	28	1	.90	.31	5.9	.31
3	19	0	.90	.32	5.2	1.23
Integrated (B2)						
1	20	0	1.1	.22	5.7	.49
2	13	0	1.0	.00	6.0	.00
3	27	1	1.1	1.04	5.6	1.09

[a] Five possible critical elements in performing the throw (side orientation, wind-up, weight transfer, hip/shoulder rotation, follow through)

[b] Six possible levels of assistance as outlined in operational definitions

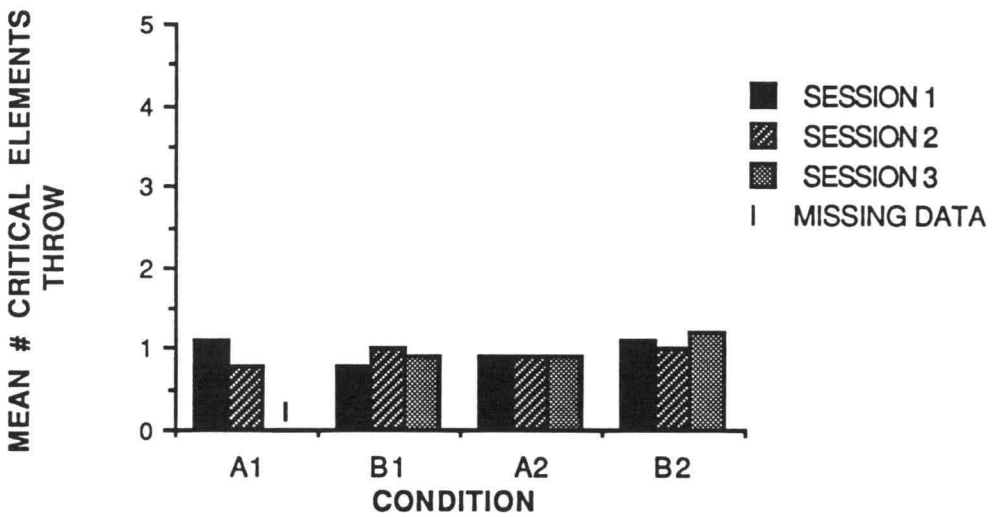

Figure 13. Number of critical elements achieved for the throw - Subject 2 (side orientation, wind-up, weight transfer, hip/shoulder rotation, follow through)

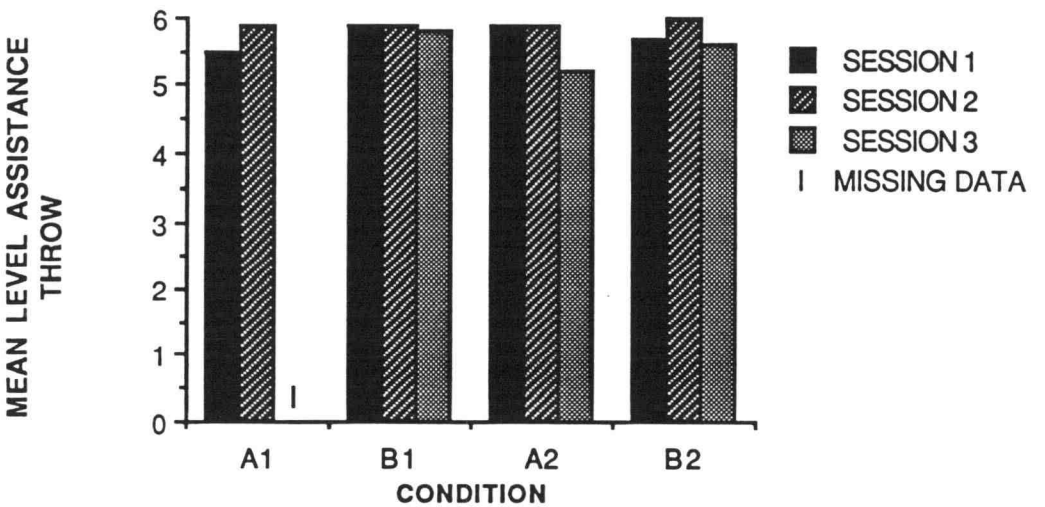

Figure 14. Level of assistance for the throw - Subject 2 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

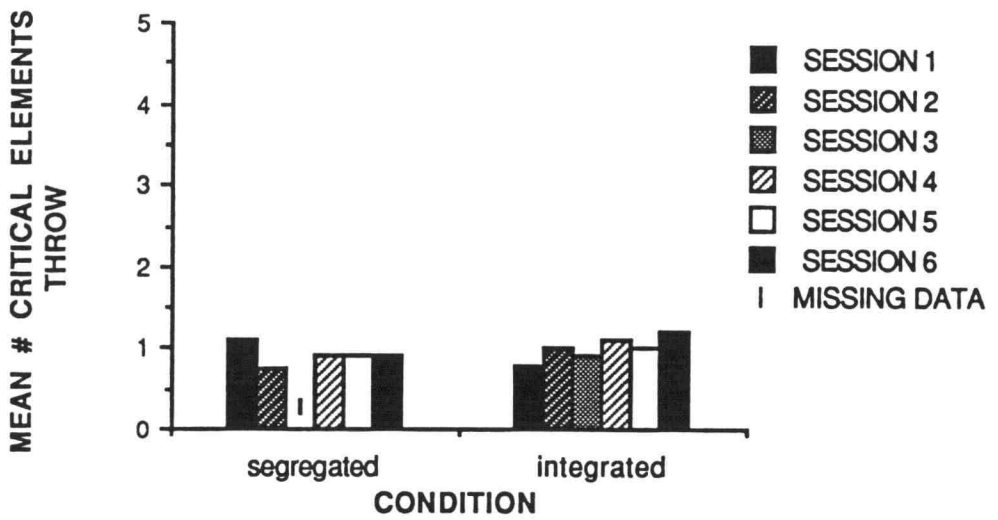

Figure 15. Number of critical elements for grouped conditions - Subject 2 (side orientation, wind-up, weight transfer, hip/shoulder rotation, follow through)

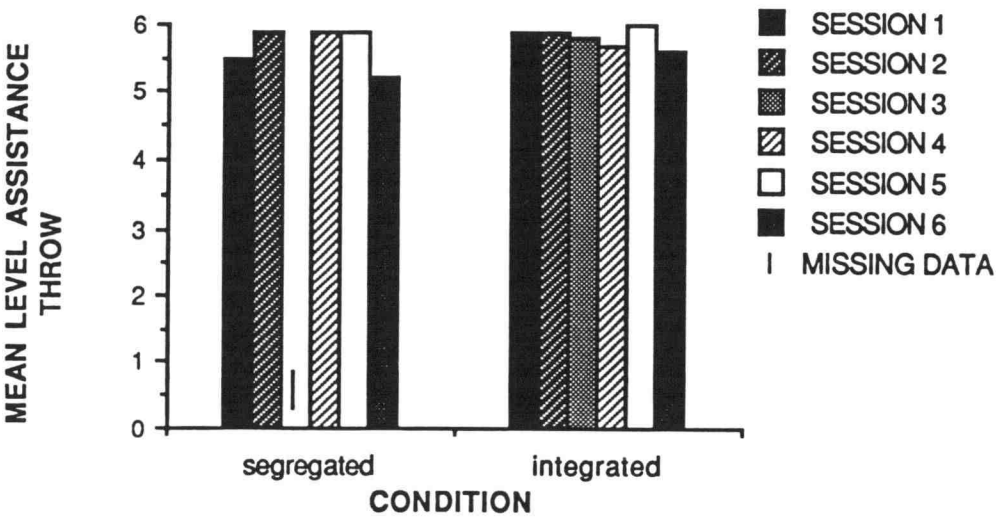

Figure 16. Levels of assistance for grouped conditions - Subject 2 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist.

Subject 3

Subject 3 was filmed in 24 sessions for this investigation. He completed 12 sessions of the jump (see Table 4.8) and 12 sessions of the throw (see Table 4.9). Each session has been analyzed to determine the quality of this motor performance in segregated and integrated settings.

Jump

Subject 3 completed 300 jump trials in 12 sessions and 294 of those trials were analyzed in this study (see Table 4.8). The quality of his performance remained consistent. One critical element, a two foot landing with feet ahead of his center of mass was evident. The emergence of a second and/or third critical element was observed in 27% of the trials analyzed. The use of a preparation stance (arms back; knees bent) and arm thrust forward appear to be emerging skills for Subject 3. Within each condition the number of critical elements completed per session was variable. The greatest stability was demonstrated in condition B1 (100%) and A2 (67%). The first and last conditions had stability levels of 33%. The level of assistance did remain stable within each condition (100%). He required the most assistance in the A1 condition and the least amount in the B2 condition (see Table 4.8).

Level changes occurred between all conditions for the number of critical elements completed (see Figure 17). The largest level changes were evident with each move into the integrated condition. The move from A2 to B2 resulted in the largest change ($\underline{M}$=1.1-$\underline{M}$=.1) (see Figure 17). The move from integrated to segregated (B1-A2) resulted in a slight increase. The mean level of assistance increased or maintained an even level with each move from segregated to integrated (see Figure 18). Subject 3 increased his level of independence with each new condition.

The trend was accelerating for the data in the segregated conditions for the mean number of critical elements (see Figure 19). The data were variable throughout both the A1 and A2 conditions with an overall trend stability of 33 percent. The trend in the integrated conditions had a decelerating pattern and also demonstrated a variable pattern (67% stability). The trend direction in the level of assistance in both the segregated and integrated conditions was accelerating as may be seen in Figure 20. The pattern in the segregated condition remained variable (50% stability) while there was a stable trend (100%) in the integrated conditions.

Table 4.8

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Jump: SUBJECT 3

			Critical Elements[a]		Assistance Level[b]	
Session	No. of Attempts		M	SD	M	SD
	analyzed	N/A				
Segregated (A1)						
1	22	0	1.3	.63	4.0	1.9
2	31	0	1.1	.62	5.1	1.5
3	19	0	2.1	.88	4.3	2.1
Integrated (B1)						
1	13	1	1.2	.83	5.2	1.5
2	18	3	1.3	.69	5.7	.57
3	18	0	1.1	.24	5.6	.98

Table 4.8 continued

Session	No. of Attempts analyzed	N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	18	0	1.3	.46	5.6	.98
2	29	1	1.6	.63	5.8	.62
3	19	0	1.1	.23	5.5	.77
Integrated (B2)						
1	36	1	.10	.65	5.9	.23
2	40	0	1.2	.58	5.9	.47
3	31	0	.70	.74	5.9	.56

[a] Five possible critical elements in performing the jump (knees bent, arm thrust, take off, 2 feet land, arms/quads).

[b] Six possible levels of assistance as outlined in operational definitions

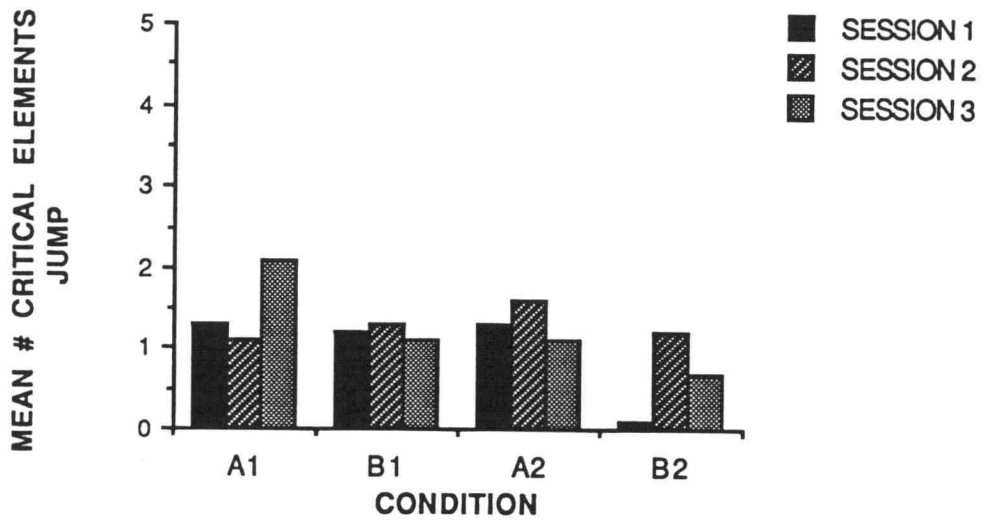

Figure 17. Number of critical elements achieved for the jump - Subject 3 (knees bent, arm thrust, take off, 2 feet land, arms/quads).

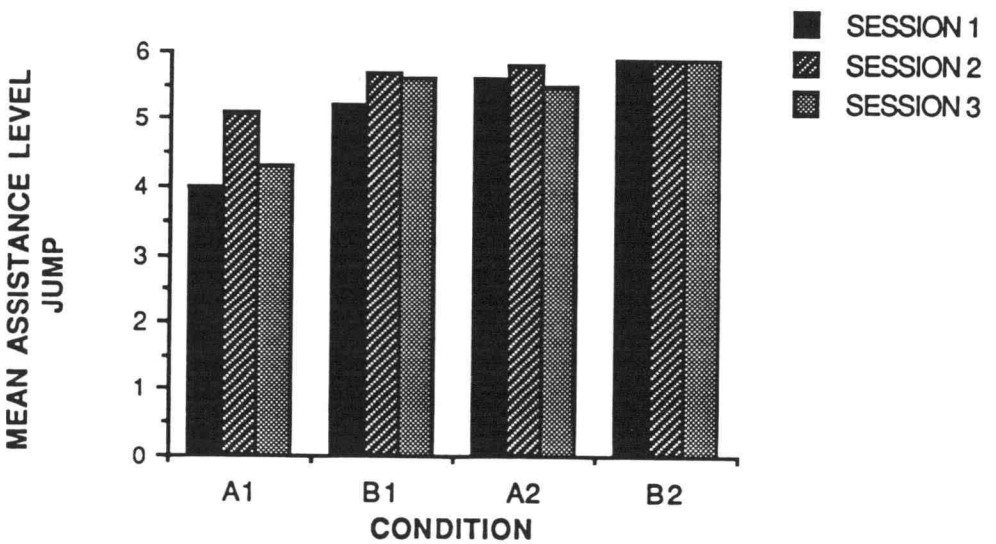

Figure 18. Levels of assistance for the jump - Subject 3 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

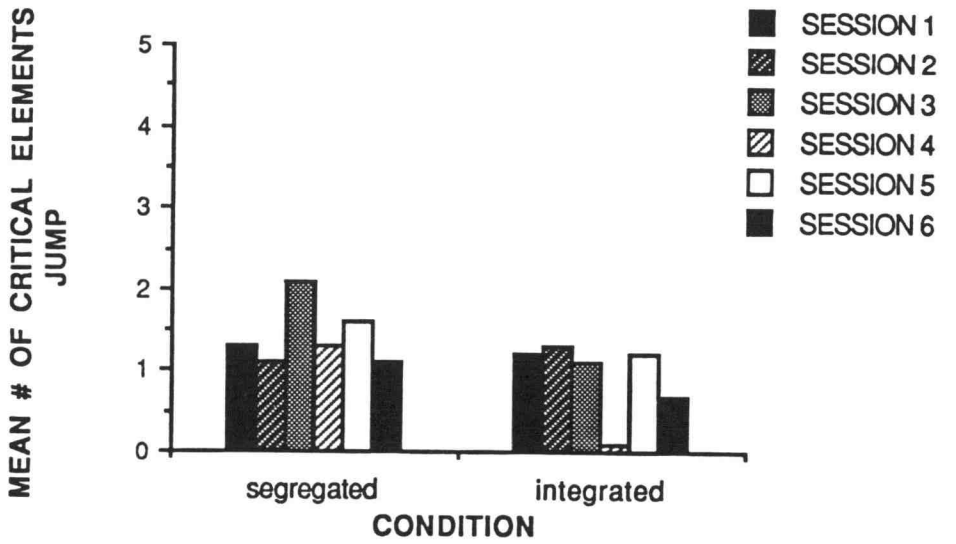

Figure 19. Number of critical elements for grouped conditions - Subject 3 (knees bent, arm thrust, take off, 2 feet land, arms/quads).

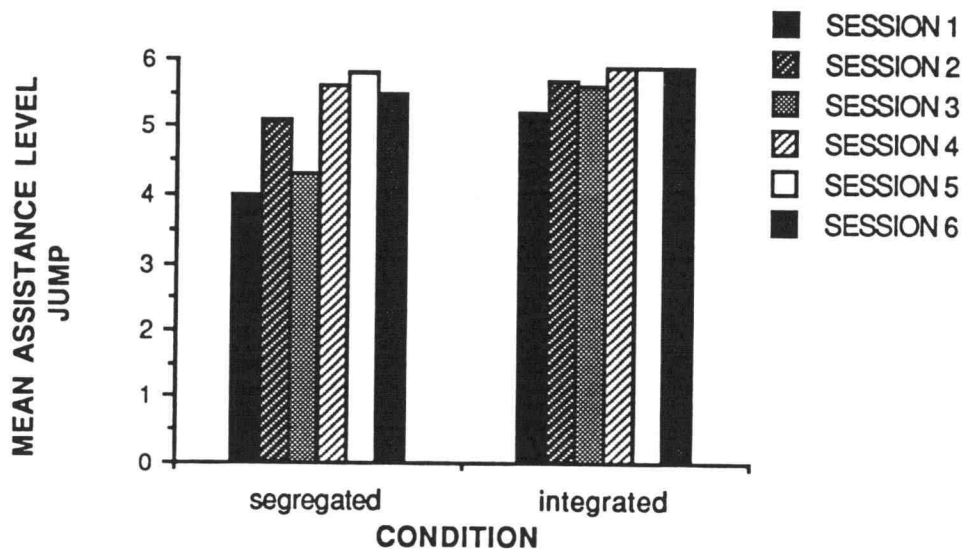

Figure 20. Levels of assistance for grouped conditions - Subject 3 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Throw

Subject 3 was filmed completing 282 attempts of the throw and 264 were analyzed in this investigation. He consistently demonstrated one critical element within each condition, the follow through with his hand toward the target (see Table 4.9). A very small percentage (3%) of the trials included more than one critical element. The emergence of a transfer of weight to the opposite foot was the second critical element seen in 50% of those trials. The quality of his performance remained stable (100%) within each condition for the mean number of critical elements. The level of assistance he utilized also remained stable within each condition (100%). He performed independently for 89% of all attempts.

Moves between conditions did not cause a level change in the number of critical elements performed for Subject 3 (see Figure 21). Summary means for each condition remained consistent ($\underline{M}$=1.0-$\underline{M}$=1.1). The summary scores for the level of assistance were all $\underline{M}$=5.9 for the final three conditions (see Figure 22).

A slight acceleration in the trend of the data was apparent when all segregated sessions were grouped to examine the number of critical elements performed by Subject 3 (see Figure 23). The trend in the data pattern was stable (100%). The integrated sessions show slightly more variation but have an overall zero celeration line and demonstrate stability (100%). The level of independence utilized by Subject 3 across all segregated sessions creates an accelerating trend in the direction of the data pattern (see Figure 24). The direction in the integrated sessions was closer to a zero celeration line. His level of independence remained stable across all sessions of both segregated and integrated settings.

Table 4.9

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Throw: SUBJECT 3

Session	No. of Attempts analyzed	No. of Attempts N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A1)						
1	3	1	1.0	.00	5.7	5.8
2	20	1	1.0	.00	5.3	.91
3	22	1	1.0	.00	6.0	.21
Integrated (B1)						
1	10	1	1.0	.32	5.9	.32
2	19	5	1.1	.23	6.0	.00
3	23	1	1.0	.43	5.9	.29

Table 4.9 continued

Session	No. of Attempts analyzed	N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	38	2	1.1	.67	6.0	.00
2	19	0	1.1	.52	5.8	.37
3	36	0	1.0	.33	5.8	.72
Integrated (B2)						
1	27	2	1.2	.77	5.7	.81
2	26	1	1.0	.20	6.0	.00
3	21	3	1.0	.00	5.9	.36

[a] Five possible critical elements in performing the throw (side orientation, wind up, weight transfer, hip/shoulder rotation, follow through)

[b] Six possible levels of assistance as outlined in operational definitions

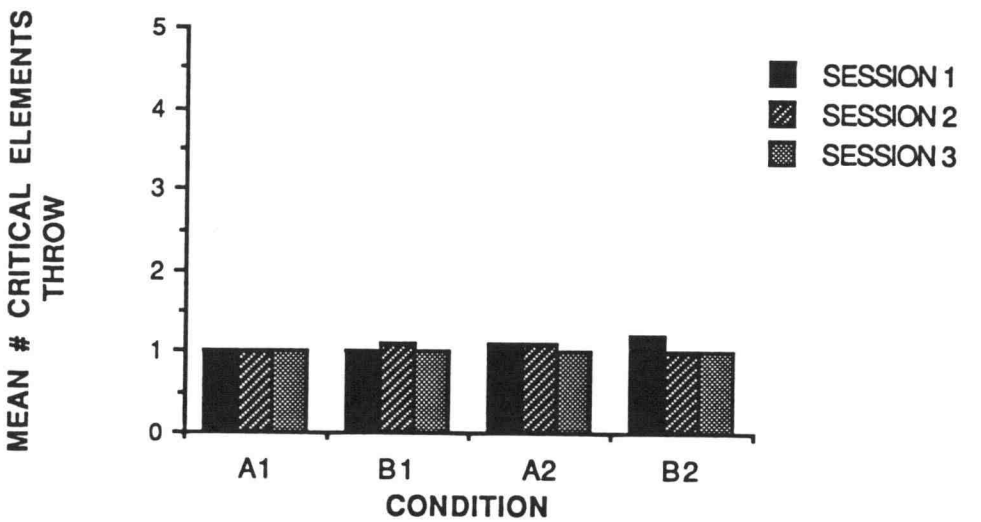

Figure 21. Number of critical elements achieved for the throw - Subject 3 (side orientation, wind up, weight transfer, hip/shoulder rotation, follow through)

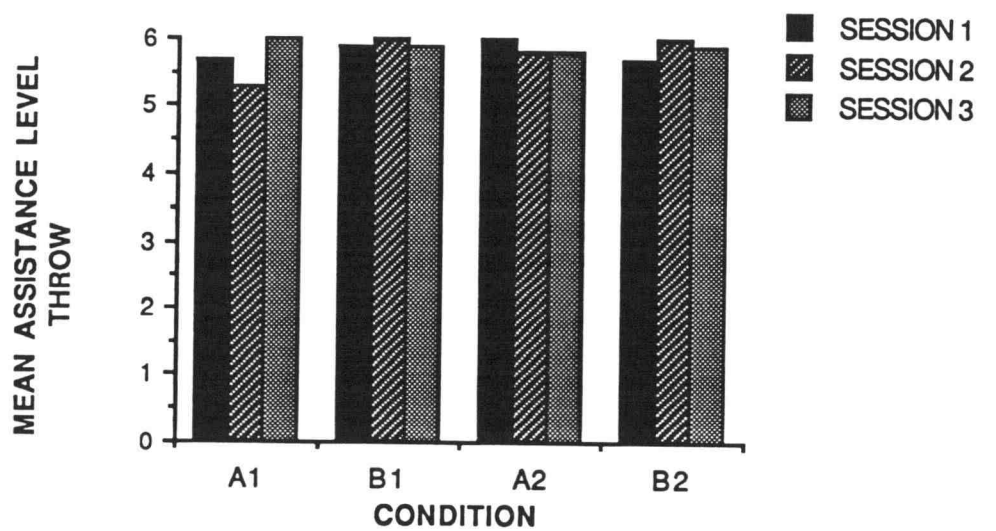

Figure 22. Level of assistance for the throw - Subject 3 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

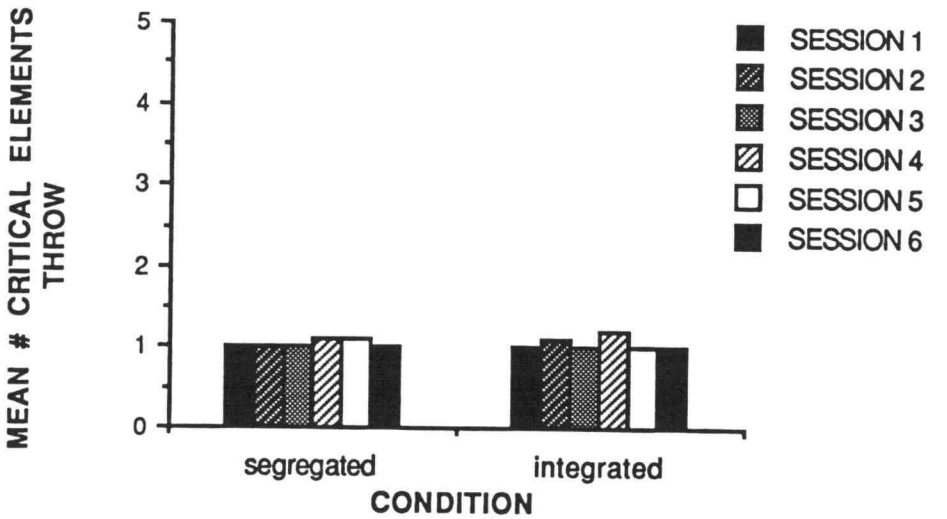

Figure 23. Number of critical elements for grouped conditions - Subject 3 (side orientation, wind up, weight transfer, hip/shoulder rotation, follow through)

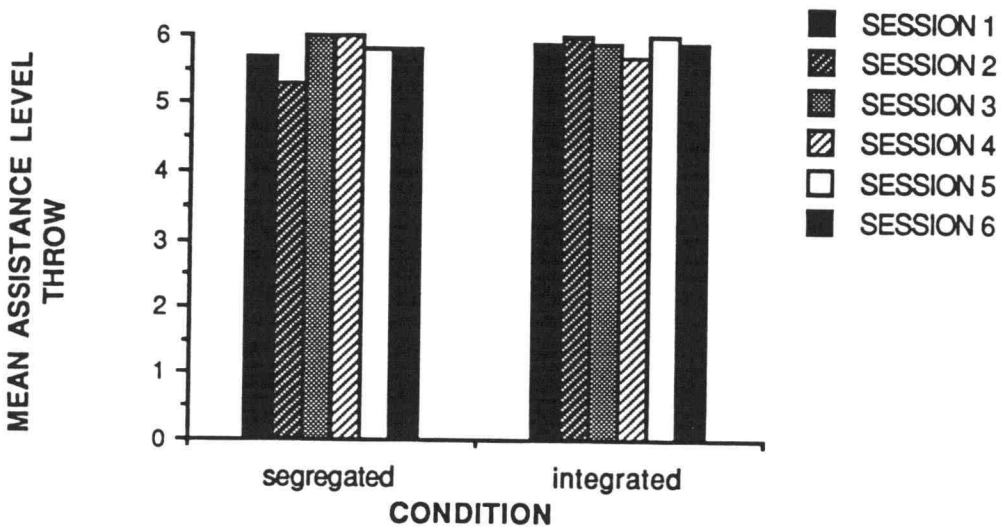

Figure 24. Level of assistance for the grouped conditions - Subject 3 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Subject 4

Subject 4 was filmed in 20 sessions for this investigation. She completed 9 sessions of the run (see Table 4.10) and 11 sessions of the kick (see Table 4.11). Each session has been analyzed to determine the quality of her motor performance in segregated and integrated settings.

Jump

The trials of the jump analyzed (194) for Subject 4 contained between one and four critical elements. She consistently had two elements present in her performance, a two foot landing ahead of her body mass and an arm thrust in a forward direction. These two critical elements were evident throughout A1 (100% stability) (see Table 4.10). Her performance in condition A2, session one, included the emergence of a third critical element. This element, prepatory stance with arms back and knees bent, increased the quality of her performance yet the level of stability within this condition diminished (33%). Stability was evident in her level of independence within each condition. The mean level of assistance utilized by Subject 4 remained stable (100%) with verbal prompting utilized most (42%) in condition A2.

Level changes between conditions, for the number of critical elements achieved, were most apparent from condition B1 to A2 (M=1.9-M=3.1) and A2 to B2 (M=1.9-M=.5) (see Figure 25). Her summary scores were greater than two for the segregated conditions. The summary score for integrated condition B1 (M=1.8) was similar to the segregated means. The B2 summary score represents one session. Level changes between conditions for level of assistance consistently decreased over the first three conditions and then stabilized from condition A2 to B2 (see Figure 26).

The trend in the data for Subject 4 in segregated sessions was accelerating, but variable, for the performance of critical elements (see Figure 27). Her data pattern within integrated conditions was decelerating and variable (33% stability). The mean level of assistance for grouped condition data was variable for the segregated conditions but stable for integrated grouped sessions (see Figure 28).

Table 4.10

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Jump: SUBJECT 4

Session	No. of Attempts		Critical Elements[a]		Assistance Level[b]	
	analyzed	N/A	M	SD	M	SD
Segregated (A1)						
1	34	0	2.4	1.1	5.9	.29
2	20	1	2.1	1.3	5.9	.37
3	N/A		N/A		N/A	
Integrated (B1)						
1	27	0	2.2	1.1	5.7	.68
2	31	0	1.3	1.1	5.7	.63
3	23	0	1.9	1.2	5.7	.70

Table 4.10 continued

Session	No. of Attempts analyzed	N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A2)						
1	12	0	3.1	.90	5.4	.90
2	15	1	2.3	.98	5.4	.52
3	15	0	1.9	1.4	5.9	.35
Integrated (B2)						
1	17	1	.50	.62	5.9	.24
2	N/A		N/A		N/A	
3	N/A		N/A		N/A	

[a] Five possible critical elements in performing the jump (knees bent, arm thrust, take off, 2 feet land, arms/quads).

[b] Six possible levels of assistance as outlined in operational definitions

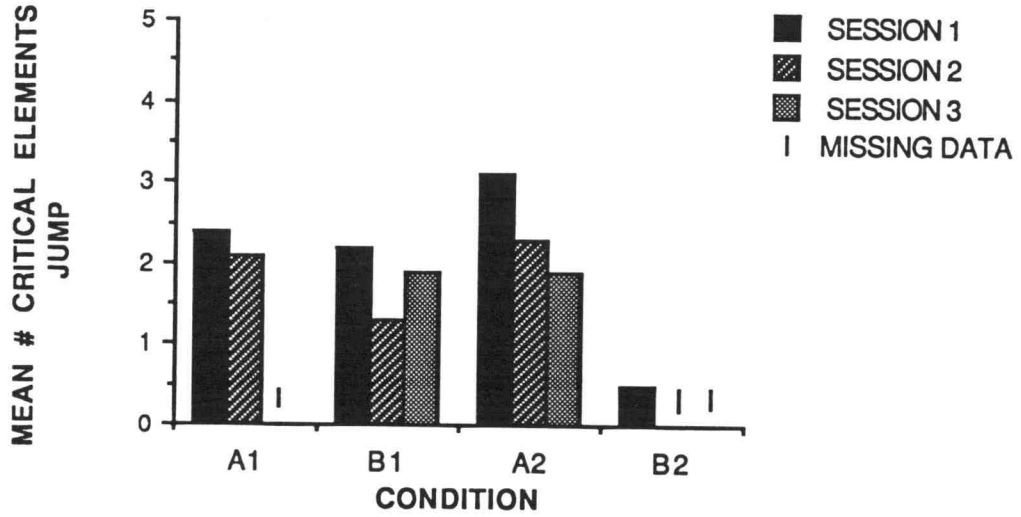

Figure 25. Number of critical elements achieved for the jump - Subject 4 (knees bent, arm thrust, take off, 2 feet land, arms/quads).

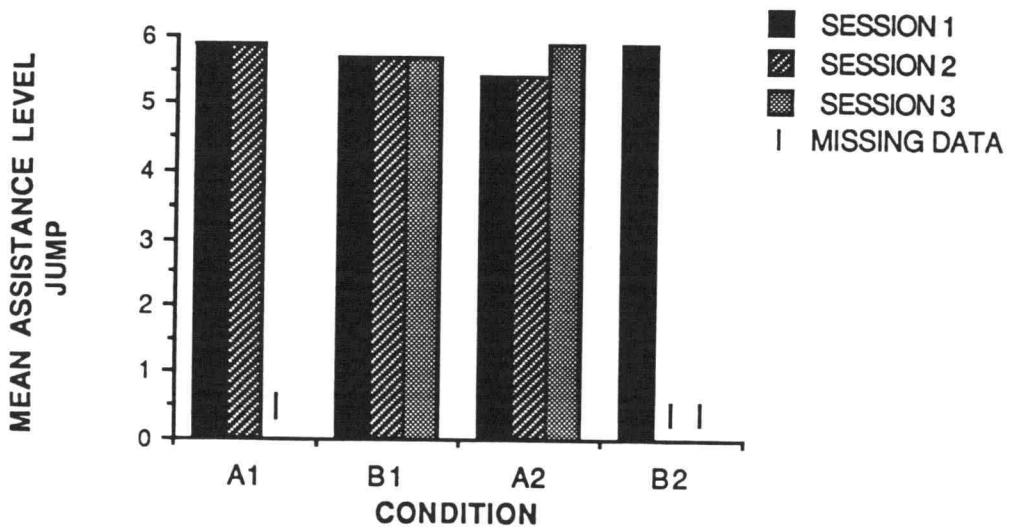

Figure 26. Level of assistance for the jump - Subject 4 (independent, verbal, verbal/model (peer), verbal model (teacher), partial assist, full assist).

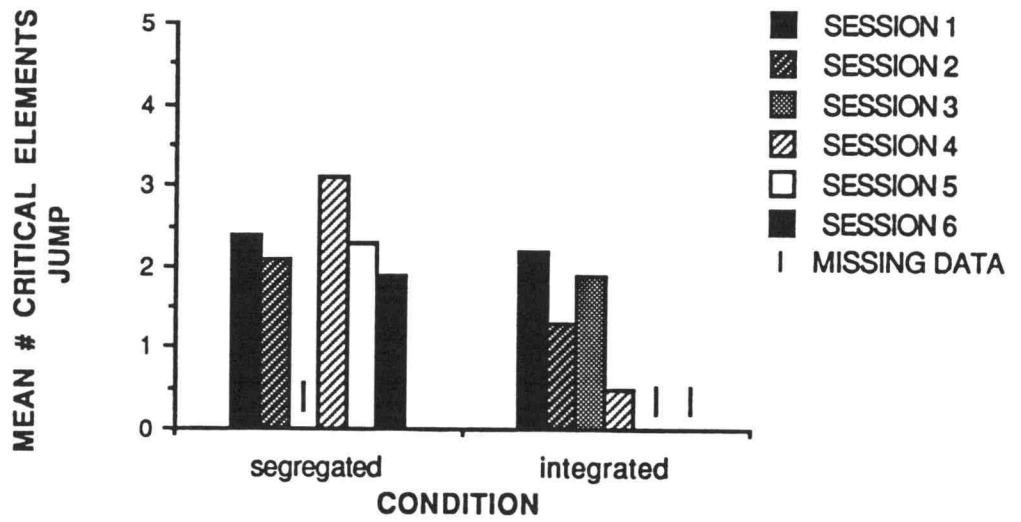

Figure 27. Number of critical elements for grouped conditions - Subject 4 (knees bent, arm thrust, take off, 2 feet land, arms/quads).

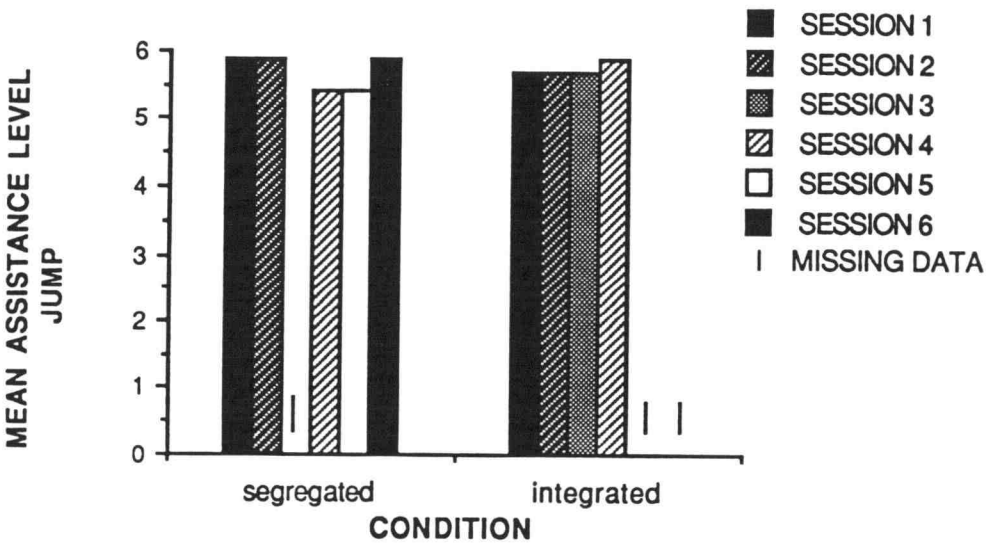

Figure 28. Level of assistance for grouped conditions - Subject 4 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

Kick

Subject 4 consistently performed three critical elements while kicking (see Table 4.11). There was contact with the center of the object with her foot, arm opposition, and follow through of her kicking leg to the target. Level of stability within conditions was 100% for the mean number of critical elements. Mean level of assistance utilized by Subject 4 remained stable (100%) within each condition. She maintained a high level of independence within each condition. Verbal prompting was utilized in only 14% of all attempts.

Level changes between conditions were minimal for Subject 4. The largest decrease in level occurred between condition A2 and B2 (see Figure 29). She was able to maintain a summary mean performance of approximately three critical elements for each condition. Level of independence was consistent between condition changes, with the exception of the move from B1 to A2 (see Figure 30).

The direction of the data for the number of critical elements was decelerating for Subject 4 and remained variable in segregated and integrated conditions (see Figure 31). The trend in her data pattern was more stable in segregated than integrated settings (83% and 0% respectively). Her mean level of assistance in the segregated conditions demonstrated a slight acceleration (see Figure 32). In the integrated conditions a zero celeration line was calculated. In both the segregated and integrated conditions the trend in the data pattern was stable (100%).

Table 4.11

Mean Number of Critical Elements Achieved and Assistance Level Utilized for the Kick: SUBJECT 4

Session	No. of Attempts analyzed	No. of Attempts N/A	Critical Elements[a] M	Critical Elements[a] SD	Assistance Level[b] M	Assistance Level[b] SD
Segregated (A1)						
1	26	0	2.7	1.0	5.9	.37
2	14	0	2.9	.62	5.6	.50
3	18	0	2.8	.62	5.9	.32
Integrated (B1)						
1	9	0	3.0	.50	6.0	.00
2	12	0	3.0	.29	5.8	.39
3	18	2	2.7	.77	5.8	.38

Table 4.11 continued

Session	No. of Attempts		Critical Elements[a]		Assistance Level[b]	
	analyzed	N/A	M	SD	M	SD
Segregated (A2)						
1	9	0	2.3	1.3	5.3	.50
2	19	0	3.0	.74	5.9	.32
3	12	0	2.6	.51	6.0	.00
Integrated (B2)						
1	45	0	2.0	.89	5.9	.29
2	16	1	2.8	.40	6.0	.00
3	N/A		N/A		N/A	

[a] Five possible critical elements in performing the kick (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through)

[b] Six possible levels of assistance as outlined in operational definitions

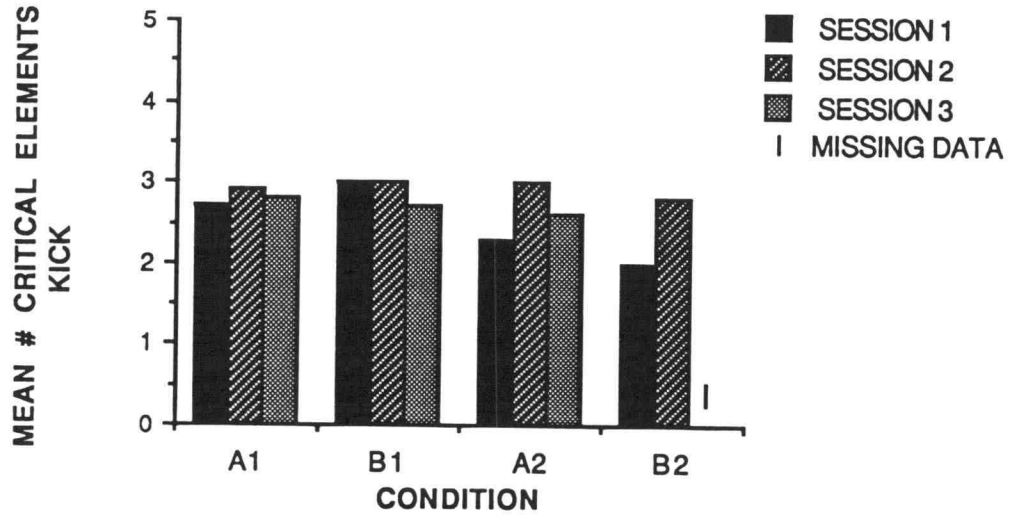

Figure 29. Number of critical elements achieved for the kick - Subject 4 (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through)

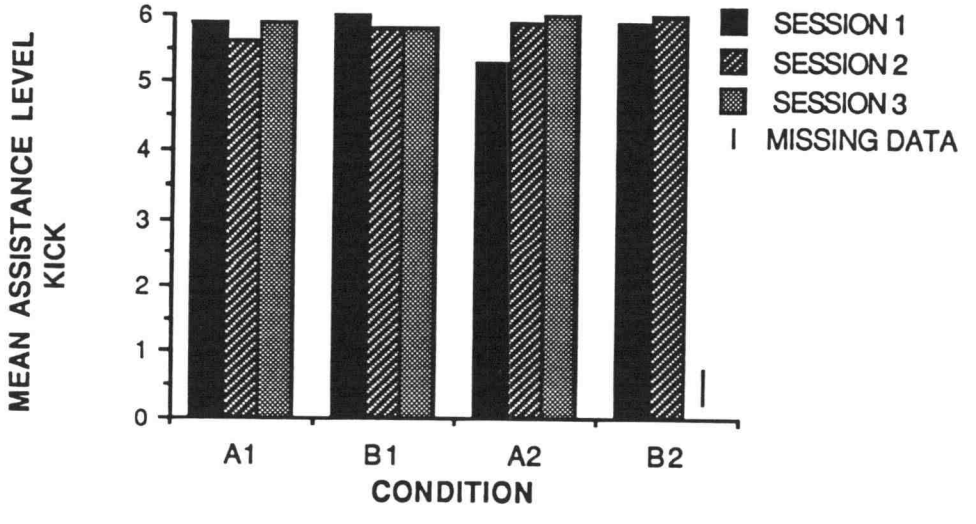

Figure 30. Level of assistance for the kick - Subject 4 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

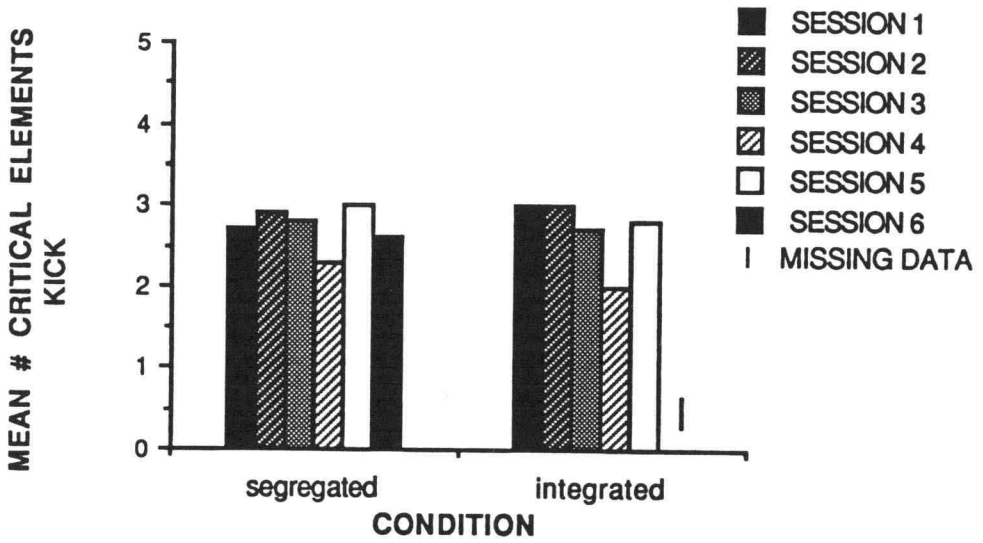

Figure 31. Number of critical elements for grouped conditions - Subject 4 (step nonkicking leg, knee flex, ball contact, arm opposition, leg follow through)

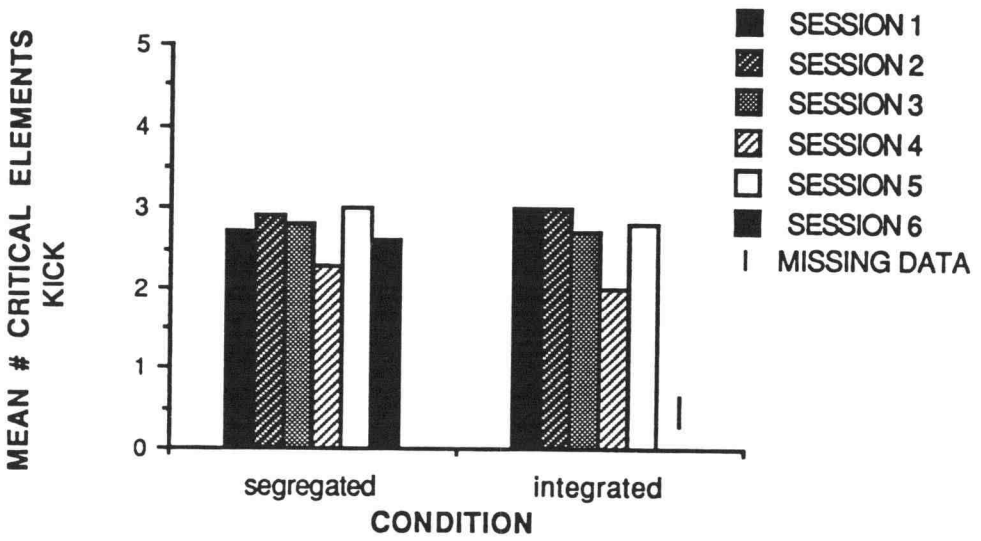

Figure 32. Level of assistance for grouped conditions - Subject 4 (independent, verbal, verbal/model (peer), verbal/model (teacher), partial assist, full assist).

CHAPTER V

DISCUSSION

The purpose of this investigation was to examine the effect of an integrated adapted physical education setting on the motor performance of preschool children with developmental delays. A single subject reversal design was used to determine if an integrated setting was an educationally beneficial environment to enhance the quality of gross motor performance. Four subjects were selected from an integrated early childhood special education classroom to participate in this study. Each subject was filmed during segregated and integrated adapted physical education conditions. The motor performance of each subject was evaluated on 1) the number of critical elements achieved in each attempt to practice the skill and 2) the level of assistance utilized to complete the attempt. Summary data were used for a within condition analysis to determine the level of stability for each dependent variable. Summary data were also used along with a visual analysis to determine level changes between conditions. An analysis of trend direction and stability was completed across segregated and integrated conditions to determine the overall effect of each condition on the quality of motor performance. The results of this study indicate that the quality of motor performance did not increase in the integrated adapted physical education setting. The motor performance of preschool children remained similar in segregated and integrated settings. The results for all subjects are discussed in terms of the educational significance of placing preschool children in integrated environments versus segregated environments for adapted physical education instruction.

Subject Summary

The quality of motor performance for Subject 1 did not change significantly across segregated or integrated settings throughout the course of this study. A within condition analysis of the performance of critical elements was stable during the majority of object control and locomotor portions of each condition. Subject 1 was able to perform approximately one critical element of the run, on a consistent basis, in segregated or integrated settings. He was able to perform at least one critical element of the kick and consistently demonstrate the emergence of a second element in both conditions. His level of independence was consistently higher in the object control

sessions. This may be a result of the structure of the lesson. Locomotor skill practice was structured within an obstacle course. Movement from one obstacle to the next requires the child to move to that obstacle and initiated performance. During the kicking lessons, balls were kicked back and forth between children. As Subject 1 kicked the ball, another would come near him from the other side. The ability of Subject 1 to maintain stability in his performance between conditions was an indication that the quality of his performance was not inhibited when his nondelayed peers were included in the class setting. The overall trend in the data for Subject 1 demonstrates more stability in integrated conditions. When grouped for analysis, the integrated conditions appear more stable. The segregated data patterns exhibited appears multiple data paths and variability. The ability of Subject 1 to remain motor engaged and maintain independence may assist with his placement in an integrated kindergarten physical education setting. Subject 1 does not exhibit extreme behavior problems therefore motor engagement may go unnoticed. The results of this investigation indicate that when provided motivational antecedents, the quality of his performance was maintained in integrated settings.

The quality of performance for Subject 2 remained consistent in this investigation across conditions. He was able to perform the run and throw averaging close to one critical element in each skill throughout the study. A within condition analysis of critical elements performed in the run reveals a more variable pattern during integrated sessions. This practice at a higher level may be attributed to his attempt to keep pace with his peers. His performance of the throw was very stable between conditions. His number of attempts in the first segregated session were lower because he was absent on a filming day and in one session he was hit with a ball and sat out with the teacher. The level of assistance utilized by Subject 2 for both skills was less variable in the integrated settings. His interaction with peers during the locomotor obstacle course was evidenced by his use of the level of assistance including a verbal/model by a peer. His independence during the throwing sessions, across conditions, may be attributed to his fascination with one of the throwing lessons. He was very motivated to practice trial after trial of the throw during the "pop the paper" game presented in both conditions. The structure of the object control lessons provided the opportunity to maintain a high level of motor engagement. Balls being thrown over or through the target provided constant access to equipment.

The results for Subject 2 indicate that the overall trend in the data for critical elements achieved, in the segregated condition, was accelerating for locomotor and object control. The integrated sessions demonstrated a decelerating pattern for the run and zero celeration for the throw. The level of assistance in the segregated and integrated sessions remained stable. The only area that demonstrates a decelerating trend is the run data in the integrated setting. The fact that he was incorporating emerging skills into his repertoire of movements and practicing at a higher level increased his opportunity for skill acquisition. Although this created variability in the data, it was an indication of progress. The patterns in the data for Subject 2 indicate that the quality of his performance was not compromised in the integrated setting.

The number of critical elements observed in the skill performance of Subject 3 was similar across conditions. The throw remained very stable within and between conditions. His locomotor skill (jump) was variable within and between conditions. He consistently included one critical element but the emergence of a second caused variable patterns. This variability was observed in the segregated and integrated settings. The first integrated condition was the most stable. The number of attempts to practice the jump were fewer in that condition. Slowing down to practice appeared to add consistency to his performance. His level of independence increased as the study progressed. But, as independence increased his skill level decreased. In order to perform at a higher level Subject 3 required a verbal prompt and occasionally a physical assist. The number of attempts taken during the B2 condition were the most taken in any condition. The pace increased when the nondelayed peers were in the class. Subject 3 attempted many trials but the quality of his performance as measured by the critical elements decreased. The trend in data patterns were far more variable during the locomotor skill practice than the object control. The overall trend direction of the data was decelerating during the integrated condition and remained variable. He was observed practicing at his highest level in condition A1, but required the most assistance. Subject 3 had data patterns that were variable but with a close examination of the data his performance was close to one critical element for the locomotor. His ability to perform locomotor and object control skills was evident but much of the time he required prompting to remain successfully motor engaged.

There were no marked differences in the quality of the motor performance of Subject 4 in the segregated or integrated settings. The number of critical elements performed in the jump and kick did not change overall. However, variability in

performance was evident. Her performance during the locomotor sessions varied with each session of each condition. The kicking sessions remained stable within each condition. Throughout the study, Subject 4 performed independently requiring very little prompting to initiate or practice a skill. Subject 4's ability to practice independently may not positively affect her skill acquisition. Movement through the obstacle course was often hurried. The data demonstrate that in the locomotor sessions, where more assistance was provided, she had the best performance. The level of assistance needed was a verbal prompt. The results indicate that Subject 4 may not need constant one-to-one attention but will require that an instructor remind her to slow down to practice her skills. The decelerating trend in much of the grouped data may be attributed to Subject 4's declining performance toward the end of the study. She was often off task and coaxing others to do the same, unmotivated to participate, or hurrying through many of the activities without attention to her performance. There were many situations outside of the adapted physical education setting that may have influenced her behavior. Near the end of the investigation she was absent from school and was unable to complete the final sessions of this investigation.

Implications

Much of the literature examining preschool integration has focused on development within the social domain. Developmental measures, testing multiple domains, are administered at the completion of many investigations to determine the effect of integration on various domains of learning. The effect of integration on gross motor performance is often determined by examining the gross motor portion of these tests. The effect of integration on gross motor performance has not been investigated directly by implementing a gross motor curriculum and evaluating results. Previous research has provided evidence that structured programming and quality instruction will improve the gross motor skill of preschool age children with and without disabilities or delays (Kelly et al., 1989; van der Mars & Butterfield, 1988; Rimmer & Kelly, 1989). This study was designed to determine if structured programming provided in an integrated setting would enhance the quality of gross motor performance of children with developmental delays. The results indicated that the quality of motor performance was not increased by participation in an integrated setting. Subjects were provided structured adapted physical education programming in segregated and integrated settings. A trial by trial analysis was used to determine the quality of motor

performance within each setting. Although within condition variability was evident in the number of critical elements performed for some of the subjects, skill level did not change throughout the course of the study. The assistance utilized by subjects to maintain their skill level was variable within conditions but overall their level of independence was maintained.

Children with developmental delays or disabilities are often integrated with their nondelayed peers based on the premise that they will be exposed to more complex and behaviorally appropriate environments (Peck & Cooke, 1983). Children with delays, integrated for physical education, would therefore have the opportunity to observe and model the performance of developmentally appropriate movement patterns. An increased pace within an integrated physical education environment would provide more opportunities for practice. Theoretically, this environment should provide educational benefits not found in segregated environments. But, the complexity of an integrated environment could have a deleterious effect upon the quality of the motor performance of children with delays if they are not provided appropriate assistance within integrated settings. The integrated sessions in this study did provide a more complex environment for children with developmental delays. The pace with which the children moved through the locomotor obstacle course increased and the frequency with which objects were kicked or thrown increased. Results of this study indicated that the presence of nondelayed peers in the environment as "proximity peers" did not consistently affect the motor performance of children with developmental delays. The number of practice trials for children with delays was not consistently increased or decreased in the integrated setting. Although more practice may have been beneficial, the results indicated that practice time was not inhibited. During practice, the number of critical elements performed and the level of assistance required remained consistent. The increased complexity of the environment did not positively or negatively affect the quality of the gross motor performance for children with developmental delays. Placement of preschool age children with developmental delays in segregated or integrated settings should be completed based upon individual needs. The variability within conditions, demonstrated in this study, indicates that the optimal environment for learning may vary across subjects and skills.

The opportunity for preschool age children without delays to maintain or improve gross motor performance in an integrated setting has often been questioned. Educators and parents may question whether an environment with preschool children

with delays and/or disabilities is stimulating and complex enough to encourage skill improvement for same age children without delays. The peer models participating during the integrated conditions of this study were given the Test of Gross Motor Development (Ulrich, 1985) to determine if gross motor developmental changes occurred throughout the course of the study. The results provide evidence that participation with children with delays did not effect the skill level of peers without delays. This evidence is encouraging and supports integration of preschool children with and without delays and/or disabilities in gross motor programs structured to meet the individual needs of all children.

Environments structured to encourage child-directed behaviors are developmentally appropriate for preschool age children (Bredekamp, 1987). Initiating and completing tasks without constant attention from a teacher is considered a "survival skill" for success in kindergarten (Salisbury & Vincent, 1990). Children with delays and/or disabilities who are able to initiate tasks and remain motor engaged will likely be integrated into kindergarten physical education settings. The locomotor and object control activities presented to the children in this study were designed to encourage child-directed behavior. The level of independence remained quite high across conditions for the subjects in this investigation. Partial and full assistance was provided on only a few occasions. The majority of the assistance provided was in the form of verbal prompts with modeling from a teacher or peer or verbal prompting (without a model) to initiate or complete a skill using a specific critical element. The level of assistance remained stable and skill level was not compromised.

The intent of federal legislation is that preschool children with delays and/or disabilities are integrated with their nondelayed peers unless they are not benefiting from, or being harmed in the integrated setting (Odom & McEvoy, 1988). The results of this study demonstrated that an integrated setting was not detrimental to the quality of the gross motor performance of preschool children with developmental delays. The length of the study prohibited any results indicating a gain in gross motor skill. The Test of Gross Motor Development (Ulrich, 1985) was given to all subjects to confirm that no changes were made. The multiple trials per subject that were analyzed were used to demonstrate that the quality of performance was similar in segregated and integrated settings.

Recommendations

This research provided evidence that placement of children with developmental delays in integrated settings was not harmful to their gross motor development or level of independence. This research did not however demonstrate that performance improved when children with and without delays practiced gross motor skills together. The integrated setting in this study provided children with delays the opportunity to practice fundamental gross motor skills in an environment with their nondelayed same-age peers. A body of knowledge related to methods for enhancing the gross motor development of preschool age children with developmental delays or disabilities in integrated settings must be developed. Children with developmental delays prefer to interact with their same-aged peers (Groom & Guralnick, 1987; 1988). Activities within environmental structures that encourage interactions during gross motor skill practice should be completed.

Methods for enhancing the quality of gross motor performance with different preschool-age populations should be investigated. This study could be replicated with preschool age children with physical and sensory impairments. Activities may need to be altered to accommodate specific physical impairments but the child-directed framework could remain. Children with sensory impairments may require a modification in the prompting system used in this study but the activity model incorporating locomotor, object control, and play skill opportunities within each session could be replicated.

The activity model used in this study could be modified for use in a variety of integrated placement settings common to young children with special needs to examine the quality of their motor performance. The presentation of each skill focus (locomotor, object control, play) could be scheduled on different days or modified according to space or equipment access. This study could be replicated within day care environments, Head Start classrooms, child development centers or private preschools. Each of these settings may provide a different ratio of children with and without delays and assist in determining what ratio might best enhance the quality of gross motor performance. The ratio of children with and without delays may dictate the amount of structure provided during gross motor activity time. The need for research within these settings is critical to support the educational rationale for integrating children of all ability levels.

The method of service delivery best suited for enhancing gross motor development in integrated settings needs investigation. Questions to be addressed might include: Should multiple skills or activities with the same orientation (locomotor or object control) or varied orientations be introduced in one lesson? Does practice time within an orientation make a difference?

Qualitative and quantitative research will be important to enhance the body of knowledge in early childhood adapted physical education. Qualitative research will provide evidence that includes descriptions and accounts of all variables within the immediate environment that may effect the motor performance of young children in integrated settings. This type of research would assist in answering the complex questions that arise when studying this young population. Diversity within this population provide opportunities to complete case studies as practical methods for answering questions. Establishing experimental control will continue to make quantitative investigations difficult to complete with this population Establishing controlled environments will be very difficult considering the dynamics of a preschool age child's environment. A strictly controlled study with this age group may not produce information useful for a classroom teacher, parent, or caregiver.

Studying young children in gross motor environments is challenging. Recommendations to replicate this research or other research with similar methods and procedures are as follows:

1. Pilot studies should evaluate lessons and activities to determine appropriateness for young children with and without delays.

2. Communicate with teacher, paraprofessionals and parents describing the purpose of the intended study and the significance of gross motor programs. When an investigation has been completed it would be beneficial to know that a model for delivering services is in place for other instructor, classroom teachers, paraprofessionals or parents to take over and continue.

3. Assist instructors not familiar with gross motor skill sequences to become competent with the critical elements of each skill. This may assist them with instruction and make them feel more knowledgeable during the study as well as assist in the quality of their instruction at the completion of the study.

4. Equipment used with young children should be simple and easy to use. Fancy equipment may distract young children and take time away from the objective of the lesson.

5. Familiarize the children with video equipment prior to data collection. The Hawthorne effect may not be as problematic with this age group as the need to touch the equipment.

The study of movement and the young children is a process. Multiple variables must be considered before making judgements or conclusions about how or why children move certain ways. The dynamics of childhood alone raises a multitude of questions. A child with a delay or disability desires movement in much the same way as their nondelayed peers. The study of movement and the child with special needs should be based upon the premise that children need to move to play. Investigations into how to better create environments and surroundings for successful movement experiences will ensure that children with special needs have the opportunities afforded to all children.

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APPENDICES

APPENDIX A

Approval from the Oregon State University Committee for the Protection of Human Subjects

OREGON STATE UNIVERSITY

Committee for the Protection of Human Subjects

Chairman's Summary of Review

Title: The effect of structured intervantion on the motor performance of preschool children with developmental delays during integrated physical education.

Program Director: Jeff McCubbin, PhD

Recommendation:

X Approval	The informed consent forms obtained from each subject need to be retained for the long term. Archives Division of the OSD Department of Budgets and Personnel Service is willing to receive and archive these on microfilm. At present at least, this can be done without charge to the research project. Please have the forms retained in archives as well as in your files.
_____ Provisional Approval	
_____ Disapproval	
_____ No action	

Remarks: All concerns of the IRB have been appropriately addressed and necessary changes made.

Date: 16 September, 1992 Signature: Redacted for privacy

If the recommendation of the committee is for provisional approval or disapproval, the program director should resubmit the application with the necessary corrections within one month.

APPENDIX B

Informed Consent Document

Informed Consent:
Participation in
Adapted Physical Education Project

The intent of this project is to examine the motor performance of preschool children participating in adapted physical education. The results will be used to decide which type of instructional setting will increase success in physical education. The settings to be used in this project are those most often found in preschools. During the project, children will receive physical education in the following settings: (1) structured activity with instruction, in a segregated setting and (2) structured activity with instruction along with peer models. Each setting will be repeated once. During this project, all children will continue to have adapted physical education with individualized instruction directed to specific goals and objectives. Before the project begins, the adapted physical education schedule and teachers will be familiar to the children. The schedule and teachers will remain the same throughout the project.

If your child participates in this project she/he will be filmed in each setting as they practice two locomotor skills (run, jump), two object control skills (throw, kick), and one play skill (sliding down a slide). The investigators will record the number of attempts a child makes to practice a skill, the level of assistance a child requires from the teacher when attempting the skill, and how well the skill is performed on each attempt.

Films and recording sheets will be viewed only by those involved in this project. All children participating in this project will be identified by a code number and will remain anonymous to anyone reading the results. Parents/guardians may request to view the films or recording sheets at any time during this project. Upon completion of this project, all films and recording sheets will be destroyed.

Participation in this project is voluntary and your child may discontinue participation at any time without consequence or loss of benefit gained from instruction in adapted physical education. If any questions or concerns related to this project arise, they may be discussed with Jeff McCubbin, principal investigator or Laurie Zittel, Adapted Physical Education specialist.

Consent statement: I have read the above information, received an oral explanation of this project, have had my questions answered, and I agree to have my child participate.

_____ _____

Parent/Guardian Date

Investigator's statement: I have explained the purpose and procedures of this study 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
Jeffrey McCubbin, Ph.D.
120 Women's Building
Oregon State University
Corvallis, Oregon 97331

Date

_____ _____

Investigator
Laurie Zittel
120 Women's Building
Oregon State University
Corvallis, Oregon 97331

Date

APPENDIX C

Data Collection Sheets

SUBJECT WILL JUMP HORIZONTALLY AS FAR AS POSSIBLE.

Recording Form
DATE

SUBJECT #:
JUMP LESSON:
CONDITION:
DAY:
COUNTER:

CRITICAL ELEMENTS	ATTEMPTS														TOTALS
knees bent, arms behind															
arm thrust															
take off 45 degrees															
land 2 feet															
arms forward/ q quads parallel															
# of components															
percentage completed															
															range
															mean %
															SD
ASSISTANCE															
assistance level															
															mean

KEY:
* = attempt made
X = component completed
ASSISTANCE
I = independent
V= verbal
VM(P)= verbal/model (peer)
VM (T)= verbal/model (teacher)
PA= partial assist
FA= full assist
ASSISTANCE LEVEL
5= I
5= V
4= VM(P)
3= VM(T)
2= PA
1= FA

SUBJECT WILL RUN AS FAST AS POSSIBLE A DISTANCE OF 30-35 FT.

Recording Form
DATE

SUBJECT #:
RUN LESSON:
CONDITION:
DAY:
COUNTER:

CRITICAL ELEMENTS	ATTEMPTS														TOTALS
bend knee; 90 degrees															
foot placement near line															
heel - toe															
arms in opposition															
elbows bent															
# of components															
percentage completed															
															range **mean %** **SD**
ASSISTANCE															
assistance level															
															mean

KEY:
* = attempt made
X = component completed
ASSISTANCE
I = independent
V= verbal
VM(P)= verbal/model (peer)
VM(T)= verbal/model (teacher)
PA= partial assist
FA= full assist
ASSISTANCE LEVEL
5= I
4= V
3= VM(P)
2= VM(T)
1= PA
0= FA

SUBJECT WILL THROW A 3-4 IN. BALL OVERHAND TO A TARGET 5 FT. AWAY.

Recording Form
DATE

SUBJECT #:
THROW LESSON:
WEEK:
DAY:
COUNTER:

CRITICAL ELEMENTS	ATTEMPTS														TOTALS
side orientation															
near complete arm extension															
weight transfer as arm passes															
sequential hip/shoulder rotation															
follow through															
# of components															
percentage completed															
															range mean % SD
ASSISTANCE															
assistance level															
															mean

KEY:
* = attempt made
X = component completed
ASSISTANCE
I = independent
V= verbal
VM(T)= verbal/modal (teacher)
VM (P)= verbal/modal (peer)
PA= partial assist
FA= full assist
ASSISTANCE LEVEL
5= I
5= V
4= VM (P)
3= VM(T)
2= PA
1= FA

SUBJECT WILL KICK A 8-12 IN. BALL TO A TARGET 5 FT. AWAY.

Recording Form
DATE

SUBJECT #:
KICK LESSON:
CONDITION:
DAY:
COUNTER:

CRITICAL ELEMENTS	ATTEMPTS														TOTALS
step nonkicking leg															
knee flex-hip extend															
ball contact with foot															
arm in opposition															
leg follow through															
# of components															
percentage completed															
															range **mean %** **SD**
ASSISTANCE															
assistance level															
															mean

KEY:
* = attempt made
X = component completed
ASSISTANCE
I = independent
V= verbal
VM (P)= verbal/model (poor)
VM (T)= verbal/model (teacher)
PA= partial assist
FA= full assist
ASSISTANCE LEVEL
6= I
5= V
4= VM(P)
3= VM(T)
2= PA
1= FA

APPENDIX D

Filming Schedule

FILMING SCHEDULE: Each day of each condition has
* locomotor skill and lesson
* subject # being filmed
* object control skill and lesson
* subject # being filmed

* outlined # absent

CONDITION	SESSION 1	SESSION 2	SESSION 3	SESSION 5	SESSION 6	SESSION 7
SEGREGATED	Oct. 22 Run B 1 2 Throw B 2 3	Oct. 23 Jump B 4 3 Throw A 3 2	Oct. 27 Run A 2 1 Kick B 1 4	Oct. 28 Jump A 4 3 Throw A 2 3	Oct. 30 Run B 1 2 Kick A 4 1	Nov. 3 Jump B 4 3 Kick B 1 4
INTEGRATED	Nov. 4 Jump A 4 3 Throw B 2 3	Nov. 5 Run A 1 2 Kick B 1 4	Nov. 6 Run B 2 1 Throw A 3 2	Nov. 10 Jump B 3 4 Kick A 1 4	Nov. 12 Jump A 4 3 Throw B 3 2	Nov. 13 Run A 2 1 Kick B 1 4
(session 7)	Nov. 17 JUMP B 4 4 KICK A 4 4					
SEGREGATED	Nov. 18 Run A 1 2 Kick B 1 4	Nov. 19 Jump A 4 3 Throw B 3 2	Nov. 20 Run B 1 2 Kick A 4 1	Nov. 24 Jump B 3 4 Throw A 2 3	Nov. 25 Run A 1 2 Throw B 3 2	Dec. 1 Jump A 3 4 Kick B 1 4
INTEGRATED	Dec. 2 Run B 2 1 Throw A 2 3	Dec. 3 Run A 1 2 Kick A 1 4	Dec. 4 Jump A 4 3 Throw B 2 3	Dec. 8 Run B 1 2 Kick B 4 1	Dec. 9 Jump B 3 4 Kick A 4 1	Dec. 10 Jump A 4 3 Throw A 2 3

APPENDIX E

Lesson Plans

Lesson Plan

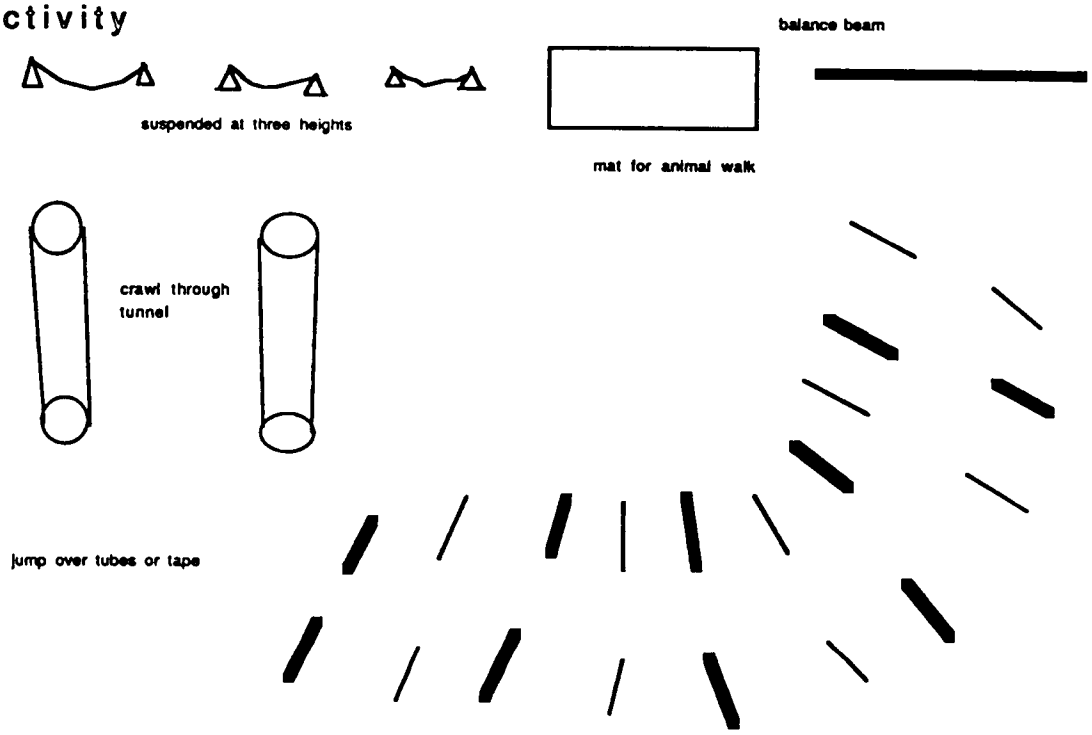
Locomotor Skill Jump(A)

Objective Students will jump over an object demonstrating the critical elements of a horizontal jump.

Opportunities to Practice Jump Within the locomotor portion of the lesson students will have opportunities to practice the horizontal jump. They will jump over ropes suspended between cones at 3 heights, over balance tubes taped to the floor, and over tape on the floor.

Equipment cones, ropes, tunnels, tubes, tape, beam, mat

Activity



Lesson Plan

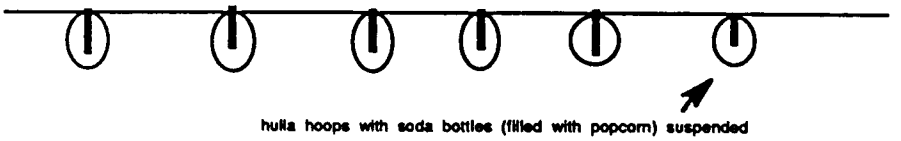
Object Control Skill Kick (B)

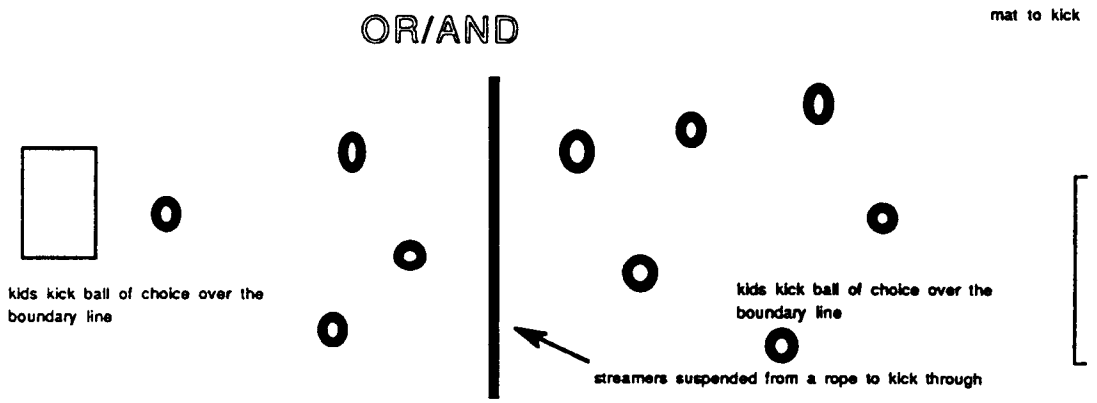
Objective Students will kick an 8-12 inch ball demonstrating the critical elements of the kick.

Opportunity to Practice Kick Within the object control portion of the lesson students will have the opportunity to practice the kick.(1) Students will kick 9 or 12 inch balls toward hoops suspended and bottles of popcorn inside.(2) Students will kick balls across boundary line to other classmates. Students will have the opportunity to kick moving and stationary balls.

Equipment hula hoops, balls (beach, black/yellow nerf, cloud colored), tape, rope, bottles, streamers

Activity





Lesson Plan

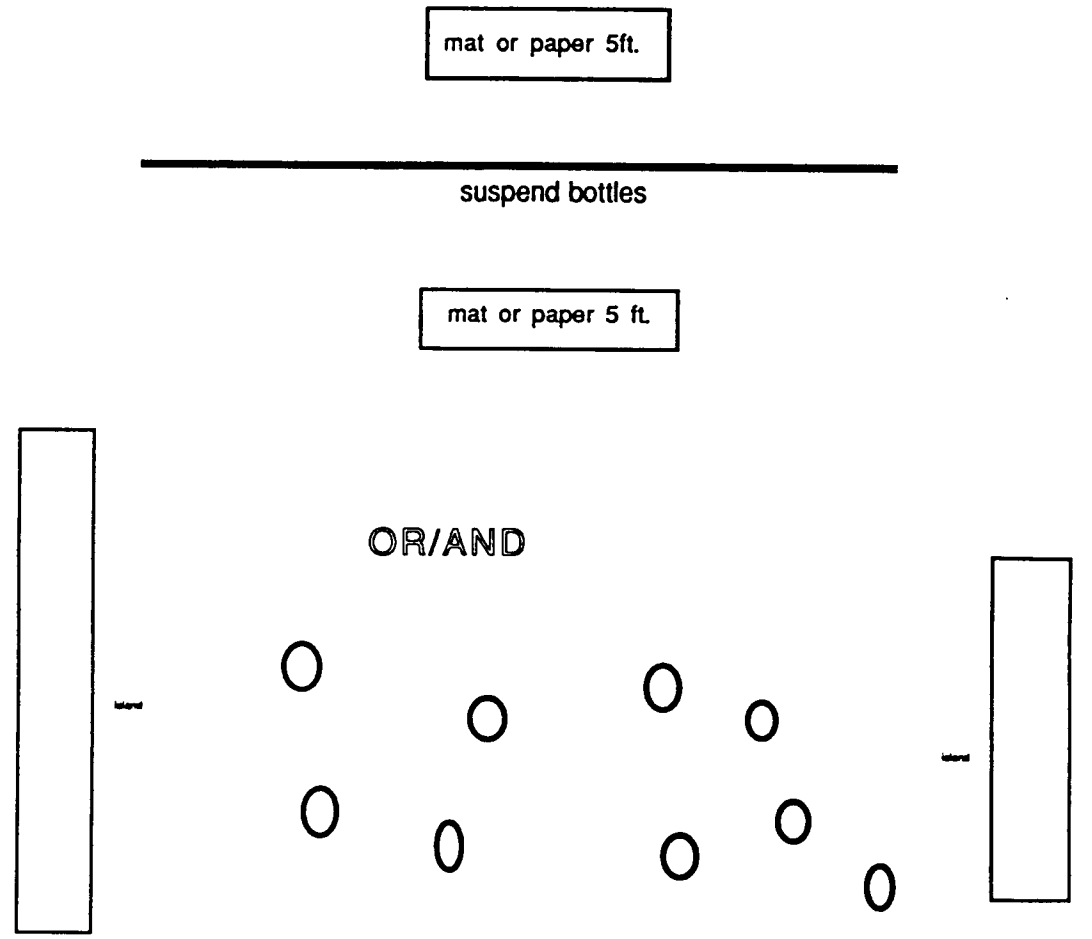
Object Control Skill Kick (A)

Objective Students will kick an 8-12 inch ball demonstrating the critical elements of the kick.

Opportunity to Practice Kick Within the object control portion of the lesson students will have the opportunity to practice the kick. (1) Students will be asked to kick 8-12 inch balls toward suspended bottles. Balls will be positioned on discs for those kicking at stationary balls and for students using a running approach. (2) Students will approach suspended bottles to kick them. Students will kick 8-12 inch balls to 'friends on the island'.

Equipment bottles, balls (black/red nerf, beach), discs, mats

Activity



Lesson Plan

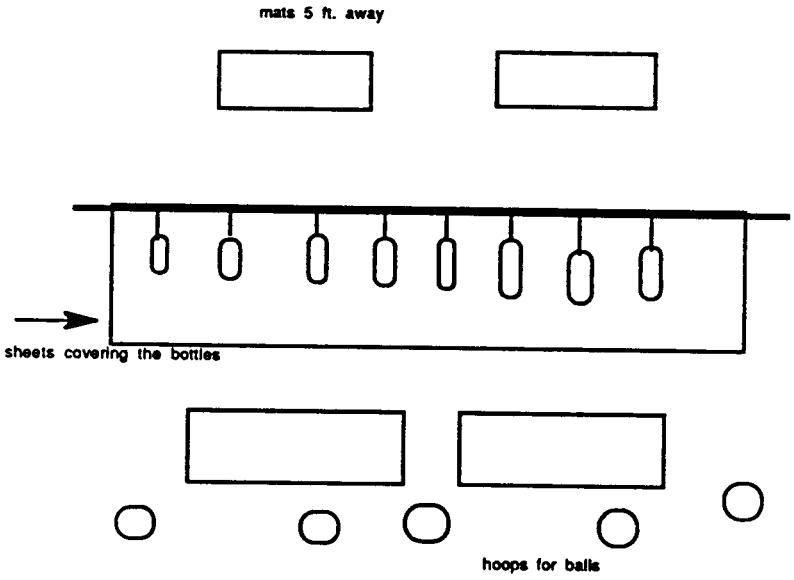
Object Control Skill Throw (B)

Objective Students will throw a 2-3 inch ball in a forward direction demonstrating the critical elements of an overhand throw.

Opportunity to Practice Throw Within the object control portion of the lesson students will have the opportunity to practice the throw. (1) Students will be asked to throw 2-3 inch objects toward brightly colored sheets and blankets with bottles of popcorn behind them. They will stand on an island (mat) 5 ft. away from the target. (2) Students will be asked to throw objects toward just the bottles.

Equipment sheets, blankets, balls (sm. whiffle, sm. bean bags, yarn), tape, bottles

Activity



Lesson Plan

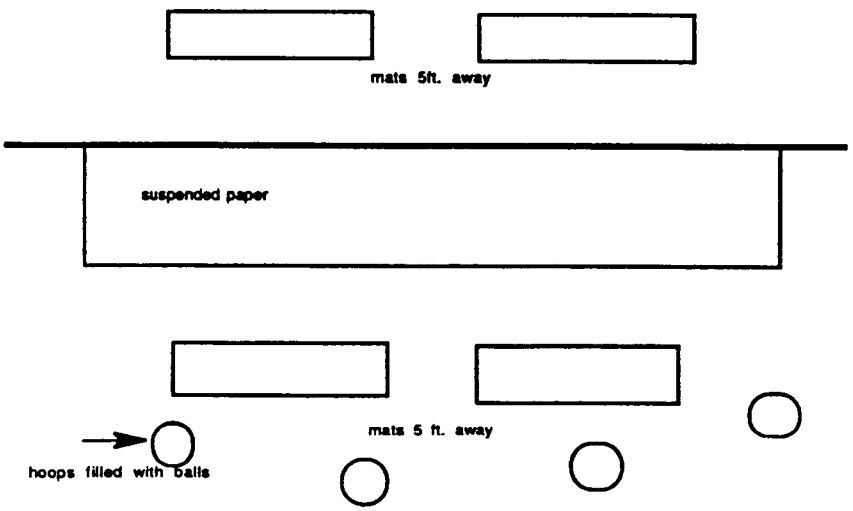
Object Control Skill Throw (A)

Objective Students will throw a 2-3 inch ball in a forward direction demonstrating the critical elements of an overhand throw.

Opportunity to Practice Throw Within the object control portion of the lesson students will have the opportunity to practice the throw. (1) Students will be asked to throw 2-3 inch objects toward 30 ft. suspended paper. They will stand on an island (mat) 5 ft. away from the target (2) Students will be asked to throw objects across to islands positioned 5-10 ft. away.

Equipment paper, rope, balls (yarn, sm. whiffle, sm. bean bag), mats, standards, tape

Activity



Lesson Plan

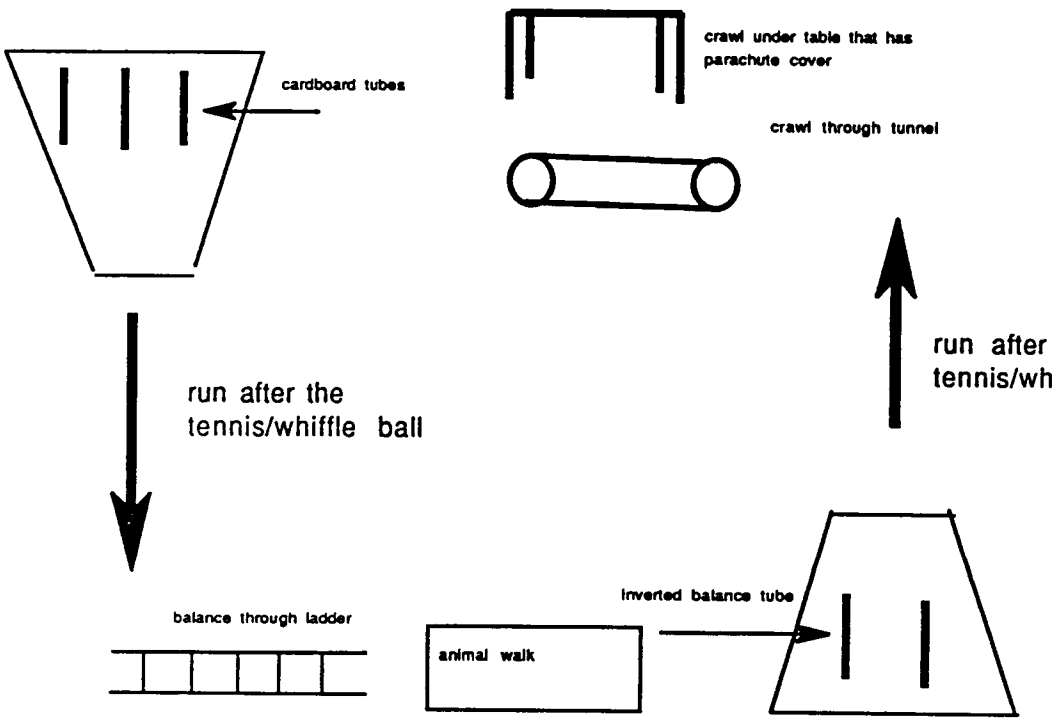
Locomotor Skill Run (B)

Objective Students will run a distance of 30 ft. demonstrating the critical elements of a run.

Opportunity to Practice Run Within the locomotor portion of the lesson students will have opportunities to practice the run. They will be asked to roll balls down a mat and run after them.

Equipment 2 wedge mats, balance tubes, golf balls, table, parachute, cardboard tubes, mats, ladder

Activity



Lesson Plan

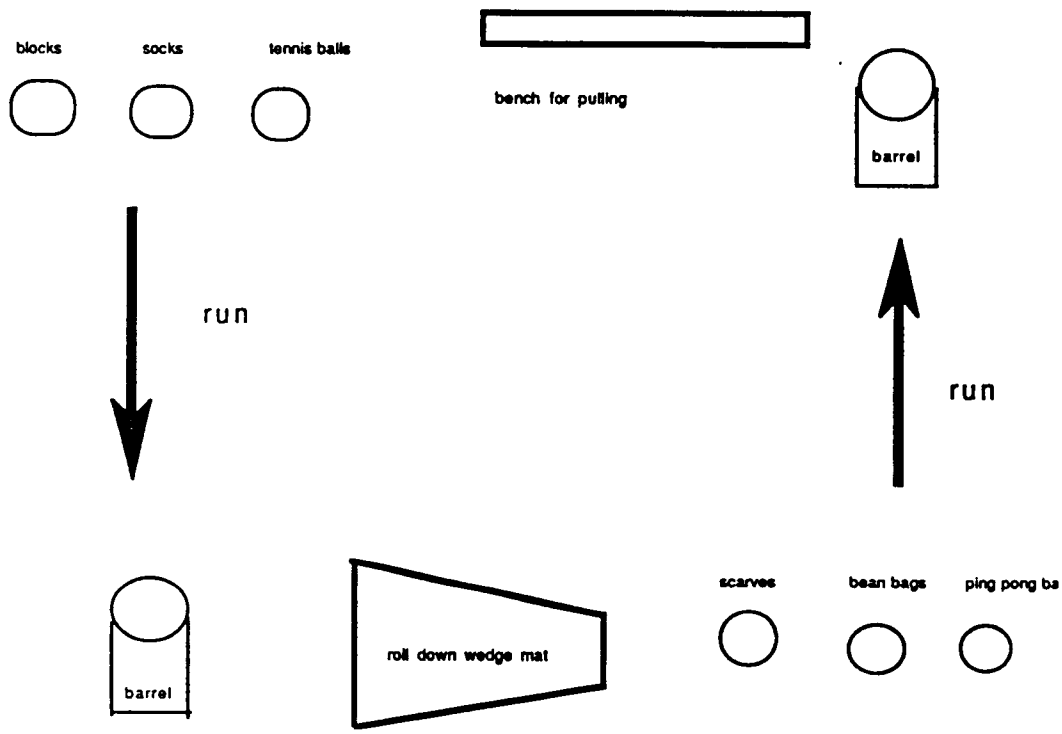
Locomotor Skill Run (A)

Objective Students will walk-run a distance of 30 feet, demonstrating the critical elements of a run.

Opportunity to Practice Run Within the locomotor portion of the lesson students will have opportunities to practice the run. They will be asked to deliver various objects across a 30 ft. section of the gym. Objects will be small enough for children to carry without altering running pattern.

Equipment 12 hoops, blocks, scarves, golf balls, pool rings, boom-a-rings, socks, tunnels, wedgemat

Activity



Lesson Plan

Locomotor Skill Jump(B)

Objective Students will jump over an object demonstrating the critical elements of a horizontal jump.

Opportunities to Practice Jump Within the locomotor portion of the lesson students will have opportunities to practice the jump. They will jump into, out of, & over scatter scotch squares taped to the floor and taped, rolled towels on the floor.

Equipment scatter scotch, table, parachute, towels, tunnels, balance beam

Activity