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Goal Setting in the Acquisition of a Motor Skill with Children who Have Learning Disabilities

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A Thesis Submitted to the Faculty of Graduate Studies In Partial Fulfillment of The Requirements for the Degree of Master of Arts (Education)

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ABSTRACT

According to Locke and Latham (1990), goal-setting is a powerful motivational tool which captivates the individual's attention and sense of effort in pooling all available resources to accomplish a task with accrued determination. Goal-setting has been used successfully in sports and physical activities (Kyllo & Landers, 1995). Positive results have also been realized with low achievers in academic tasks (Bandura & Schunk, 1981).

The purpose of this investigation was to test the effects of goal-setting on basketball free throwing with normally achieving (NA) boys and girls, and with children having learning disabilities (LD), ages 9- 13 years. This study also tested the relationship between Perceived Physical Self-Competence (Harter, 1978b) and performance.

Thirty-three children with LD and 39 NA children practiced during 10 fifteen-minute sessions, over a period of four weeks. Prior to the start of the experiment, subjects were randomly assigned to a goal condition, either goal-setting or do-your-best (control). Subsequently, they were tested and grouped by skill level, high or low, according to their object control scores on the Test of Gross Motor Development (Ulrich, 1985). A baseline score for the basketball free throw was achieved in three separate trials of 10 shots at the basket. The average score was considered the baseline level. A pre- and post-qualitative assessment of their ball throwing technique

according to ten criteria (indicated in Chapter 3) was also done. The Perceived Physical Self-Competence Scale was administered prior to and at the end of the training sessions. The do-your-best groups were surveyed at the end of the training sessions to find out whether they were setting goals or not.

Results indicated that the children with LD in the goal-setting group outperformed the control group. However, goal-setting failed to differentiate the performances of NA children. No correlation was established between Perceived Physical Self-competence and the performance of these children. Methodological key points are discussed and suggestions are given for future research with goal-setting and children.

Résumé

Selon Locke et Latham (1990), l'utilisation d'objectifs précis et spécifiques améliore la performance en saturant l'attention de l'individu et son sens de l'effort afin de recruter toutes les ressources disponibles pour réaliser une tâche avec une plus grande efficacité. L'utilisation d'objectifs s'est prouvée efficace dans les sports et les activités physiques (Kyllo & Landers, 1995). Du côté des enfants en difficulté d'apprentissage, l'utilisation d'objectifs a eu des résultats positifs dans le secteur académique (Bandura & Schunk, 1981).

Le but de cette recherche était de déterminer les effets de l'utilisation des objectifs dans la performance du lancer au panier avec des garçons et filles, âgés entre 9 et 13 ans, du secteur régulier(SR) et du secteur en difficultés d'apprentissage (DA). Cette étude a aussi évalué la relation entre les perceptions d'auto-compétence physique (Perceived Physical Self-Competence (Harter 1978b)) et la performance pour identifier s'il y avait une relation linéaire entre les deux facteurs.

Trente-trois élèves en difficulté d'apprentissage (DA) et 39 élèves SR participèrent à 10 séances de 15 minutes chacune, de pratique en lancer au panier, pour une durée de 4 semaines. Avant le début de cet entraînement, les sujets furent assignés au hasard dans le groupe avec objectifs ou le groupe "Fais de ton mieux". On procéda à une évaluation de leurs habiletés motrices concernant la manipulation d'objets par le test de Ulrich (1985), le Test of Gross Motor Development. Cela

servit à classer les élèves dans un niveau d'habileté élevé ou faible. Une évaluation de base sur les lancers au panier se fit par trois tests séparés de dix lancers. La moyenne des trois tests fut retenue comme évaluation de base. Chaque sujet a également subi une pré- et post-évaluation qualitative du lancer au panier selon dix critères spécifiés au chapitre 3. De plus, chaque sujet a complété le test de Perception de l'auto-compétence physique (Perceived Physical Self-Competence Scale), avant et après l'entraînement. Les sujets dans les groupes "Fais de ton mieux" eurent à compléter un questionnaire leur demandant s'ils avaient utilisé des objectifs lors des évaluations après chaque séance d'entraînement..

Les résultats de cette recherche indiquèrent que les objectifs eurent un effet bénéfique avec les élèves DA. L'utilisation d'objectifs n'a pas eu d'effet significatif avec les élèves SR. Soixante-dix-sept pourcent des élèves du groupe "Fais de ton mieux" se fixaient des objectifs, ce qui a pu entraver l'observation de l'usage des objectifs versus "Fais de ton mieux". Aucune corrélation n'a pu être remarquée entre la perception d'auto-compétence physique et la performance.

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CHAPTER 1

INTRODUCTION

Motivating children with learning disabilities (LD) has proven to be a difficult task for teachers. These children are characterized by academic achievement that is well below their learning potential (Kavale & Reese, 1992). Similar to normally achieving children, they have average and above average IQs (85 and over), no apparent physical trauma, normal vision and hearing. However, experiencing academic failure may lead to feelings of incompetence (Deci, Hodges, Pierson & Tomassone, 1992; Licht & Kistner, 1986). In turn, causal attributions for incompetence are often linked to learned helplessness (Canino, 1981; Dweck & Repucci, 1973).

Learned Helplessness

Children who are persistent at a task in the face of failure take responsibility for outcome and attribute failure to lack of effort. On the other hand, children who give up easily are distinguished, not by their ability level, but by their attribution of failure to factors beyond their control such as luck, task difficulty or perceptions of low ability (Dweck, 1986).

When lack of ability is believed to be the cause of failure, a sense of powerlessness in behavior outcomes may develop (Weiner, 1974). Hence, learned

helplessness emerges because these beliefs towards failure are perceived as unalterable (Elliott & Dweck, 1988; Mahon, 1982). However, when attributions are linked to external factors such as effort or task difficulty, change or possibility of improvement are more readily conceivable (Dweck, 1986).

Children with learning disabilities tend to view their successes or failures more frequently resulting from good or bad luck (Pearl, 1982). They rarely regard failure as resulting from lack of effort. These children do not see the point in investing more effort, or taking responsibility for what they are doing because they feel that this will not influence or improve their academic standing. Learned helpless children exhibit much less persistence at a task and have difficulty finding alternative solutions to a problem when compared to mastery oriented children (Diener & Dweck, 1978). They spend more time looking for the blame than searching for a solution (Diener & Dweck, 1978).

Essentially, learned helplessness is a sense of powerlessness to control outcome of events and affects motivation and persistence in any given task. Attempts at remediating learned helplessness have focussed on promoting effort attributions and having children recognize the gains they are making in acquiring new knowledge and skills (Dweck, 1986). This has been shown to be more effective than providing these children with success only experiences (Dweck, 1986). Research concerning children with learning disabilities has not clearly

demonstrated that they are learned helpless, but has demonstrated that they significantly minimize the importance of effort as a source of failure or success in the academic and non-academic situation (Canino, 1981). Hence this tendency may lead to learned helplessness.

In the motor domain, learned helplessness has been observed by the avoidance of activity (Martinek & Griffith, 1994). Children with LD are at a greater risk of experiencing motor difficulties than normally achieving children (Sherrill, 1993). As a group, these children have motor developmental delays (Bruininks & Bruininks, 1977) and may exhibit inefficient movement (Brunt & Distefano, 1982; Brunt, Magill, & Eason, 1983; Bryan & Smiley, 1983; Gruber, 1969; Haubenstricker, 1982; Kelly, 1990; Kerr & Hughes, 1987; Lazarus, 1990; Reid, 1982). Furthermore, physical awkwardness is more prevalent in this group (Taylor, 1982) than in the normally achieving population. However, some children with LD display motor proficiency levels quite similar to those of normally achieving children (Miyahara, 1994). Consequently, these children may not all share patterns of learned helplessness in the motor domain.

Goal-Setting

The process of goal-setting with children has been the subject of very few empirical studies in physical activity. Henderson, May and Umney (1989) investigated children with movement difficulties and normally achieving children

with regard to how they spontaneously set goals. They reported that children with movement difficulties set goals regardless of feedback. They would set either lower than already achieved goals or unrealistically high goals. Furthermore, this goal-setting pattern was generalized across different tasks (beanbag throw, maze pursuit and letter cancellation). This pattern of thinking has been related to learned helplessness (Henderson et al., 1989). Failing to achieve unrealistic goals does not threaten self-esteem and aiming for already achieved levels of knowledge or ability carries limited risks of failure.

Goal-setting is a self-regulating mechanism for action (Bandura, 1986; Locke & Latham, 1990). It is a powerful motivation tool which captivates the individual's attention and sense of effort in pooling all available resources to accomplish a task with accrued determination (Locke & Latham, 1985). Locke, Shaw, Saari and Latham (1981) confirmed in the industrial setting (99 of 110 studies) that *specific, difficult goals*, if accepted, result in higher performance than easy goals, vague goals or no goal. Locke and Latham (1990) also reviewed numerous studies that demonstrated how *long-term plus short-term goals* were more effective than distal goals only.

Short-term (proximal) goal-setting has been found to be useful in enhancing persistence and motivation with low achieving students (Bandura & Schunk, 1981) and learning disabled students (Kline et al., 1990; Sawyer et al., 1992; Schunk &

Swartz, 1991). Bandura and Schunk (1981) demonstrated the effectiveness of goal-setting in improving mathematical performance with low achieving children. Proximal goal-setting fostered accurate assessment of progress and appropriate estimation of success on upcoming mathematical tasks. Similarly, children with LD have difficulty appraising what they are capable of doing (Canino, 1981) and therefore, the process of goal-setting which involves self-evaluation and self-prediction of progress might be a useful tool for enhancing learning.

The goal-setting construct is influenced by perceived self-efficacy and level of commitment to the achievement of the task at hand (Locke & Latham, 1990). In this study, however, perceived physical self-competence (Harter, 1982) has been used in the place of the evaluation of self-efficacy and refers to an equivalent concept for children.

Goal-Setting in the Sport Domain

In the sport domain, results in testing goal- setting assumptions have not been as consistent as in the industrial setting. Significant effects of goal-setting were reported with children (Barnett & Stanicek, 1979; Burton, 1984, 1993; Erbaugh & Barnett, 1986; Weinberg, Bruya, Longino & Jackson, 1988), with adolescents (Bar-Eli et al., 1994) and with adults (Erffmeyer, 1987; Hall & Byrne, 1988; Hall et al., 1987; Tenenbaum, Pinchas, Elbaz, Bar-Eli & Weinberg, 1991). However, other studies have indicated neutral or partial results regarding the

effectiveness of goal-setting (Anshel, Weinberg & Jackson, 1992; Barnett, 1977; Hollingsworth, 1975; Weinberg, Fowler, Jakson, Bagnall & Bruya, 1991). Locke (1991) commented that these neutral results may have been due to the fact that do-your-best and control groups were setting goals. This would have confounded the goal-setting effect. More recently, however, a meta-analysis of 36 different studies in goal-setting revealed an effect size of 0.34 (SD= 0.026) indicating that goal-setting does enhance performance in the sport and exercise domain (Kyllo & Landers, 1995).

While goal-setting is generally effective with high achievers (Locke & Latham, 1990) there is little data concerning goal-setting in physical activity and special populations. A recent study yielded significant improvements in a maximal sit-up task with adolescents who had behavioral disorders when a short-term plus long-term was used(Bar-Eli et al., 1994).

In summary, goal-setting has proven to be a robust concept in the industrial realm (Locke & Latham, 1990). Superior improvements with goal-setting have also been found in the sport domain (Bar-Eli et al., 1994; Barnett & Stanicek, 1979; Burton, 1984, 1993; Erbaugh & Barnett, 1986; Erffmeyer, 1987; Hall & Byrne, 1988; Hall, et al., 1987; Tenenbaum et al., 1991; Weinberg et al., 1988). Furthermore, low achieving pupils and children with LD have performed significantly better with goal-setting techniques in the academic realm (Bandura &

Schunk, 1981; Kline et al., 1990; Sawyer et al.; Schunk & Swartz, 1991). Therefore, demonstrating the effectiveness of goal-setting in the sport domain with children having learning disabilities may prove goal-setting to be a viable tool for optimizing learning in this domain.

1.1 Statement of the Purpose

The main purpose of this study was to investigate the effects of goal-setting and the influence of skill level in the mastery of a motor skill with children who have learning disabilities. A sub-purpose of this study was to determine whether skill level was a more relevant predictor of success than the learning attributes of these children.

1.2 Hypotheses

1. Skill improvement for the goal-setting groups will be significantly greater than for the control groups.
2. Goal setting groups (LD and normally achieving) in the low motor skill level will yield the greatest improvements.
3. There will be no significant differences across trials between LD and normally achieving children of similar motor skill level in similar goal-setting groups.

4. Perceptions of physical self-competence will be positively related with performance.

1.3 Definitions

Learning disabilities: Classification of children who are more than two years behind in language and/or mathematical skills (Kavale & Reese, 1992)

Learned helplessness: Sense of powerlessness in behavior outcomes based on attributions of lack of ability or external locus of control (Dweck, 1986)

Proximal goal-setting: Regulating one's behavior by attempting to reach a realistic standard within a short period of time (Bandura & Schunk, 1981)

Perceived self-competence: Perceptions of one's ability in a particular domain (social, physical or intellectual) (Harter, 1982)

Motor developmental delays: Motor patterns that are not yet integrated at the expected age level (Lazarus, 1990)

Physical awkwardness: Syndrome of "children without known neuromuscular problems who fail to perform culturally-normative motor skills with acceptable proficiency" (Wall, 1982)

1.4 Delimitations

Children with LD in this study are caucasian, French-speaking and live in a small suburb of Montreal. Their ages vary from 9 to 13 years.

1.5 Limitation

The children with LD have not been randomly sampled but they should not be logically different from other LD children because they fall into the traditional definition. The object control skills tests used for the older children, those between 11 and 13 years is not standardized for this age group. However, it was assumed that the Test of Gross Motor Development (Ulrich, 1985) which describes mature skill patterns would be sensitive enough to classify pupils into high and low categories of object control proficiency.

CHAPTER TWO

REVIEW OF LITERATURE

The purpose of this study was to examine the effects of goal-setting in the acquisition of a motor skill with children having learning disabilities (LD). The children were grouped into a high or low category of skill level and compared to non-LD groups (high and low skill level) of children. It was assumed that all subjects who received specific goal-setting instruction would outperform subjects in a do-your-best goal condition, the goal-setting acting as a self-regulatory mechanism for pursuing achievement.

This chapter has been divided into two major sections: 2.1 Learning Disabilities and 2.2 Goal-Setting Theory. Subsections for Learning Disabilities will cover the following topics: 2.1.1 Overview of Definition, Incidence and Etiology, 2.1.2 Historical Perspective, 2.1.3 Educational Characteristics, 2.1.4 Motor Characteristics, and 2.1.5 Motivational Characteristics. The goal-setting theory will be covered by : 2.2.1 Introduction, 2.2.2 Factors that Mediate Goal-Setting, 2.2.3 The Application of Goal-Setting in Sports and Exercise, 2.2.4 Children and Goal-Setting and 2.2.5 Goal-Setting in the Academic Realm.

2.1 Learning Disabilities

2.1.1 Overview of Definition, Incidence and Etiology

Definition of a Learning Disability

This section is devoted to outlining characteristics of children with a learning disability. A discrepancy between one's potential for learning and achievement defines a learning disability. Learning disabilities have sparked the interest of professionals from many disciplines such as neurology, psychology, education, and occupational, speech, and language therapy. However, inconsistencies and debate regarding critical issues such as definition, characteristics, and etiology have arisen (Epstein, Cullinan, Lessen & Lloyd, 1980; Moats & Lyon, 1993). Despite these challenges, a present working definition for learning disabilities is a lag of two years below expected grade level for a child having an IQ within the normal range (85-115) (Kavale & Reese, 1992).

Incidence

As of 1989, almost 50% of all students receiving special education services in elementary and secondary schools in the U.S. were students with LD (Kavale & Reese, 1992; Lerner, 1993). These students represented 5% of all school aged children. Comparatively, in the Province of Quebec, for the school year ending in 1994-1995, 68% of children receiving specific services were identified as having mild

and severe learning disabilities, excluding mental retardation (M.E.Q., 1995). These children represented 8% of all school aged children. Males outnumber females at a 3:1 ratio according to U.S. statistics (Feagans, 1987).

Etiology

Four major hypotheses have emerged as to the cause of LD. These are: neurological or psychophysiological disturbances (Flowers, 1993; Opp, 1994; Shalev & Gross-Tsur, 1993; Snow, 1992), information processing deficits (Ayres, 1979; Cruickshank, 1977; Frostig, 1972), inefficient teaching methods (Epstein et al., 1980) and inactive learning (Bender, 1987; Poplin, 1988). The psychophysiological proponents posit that certain alterations in neural physiology may have detrimental effects on learning. Advocates of information processing deficits believe that learning disabilities originate in the disturbance of one or more salient psychological abilities such as motor development, visual, auditory or kinesthetic perception (Epstein et al., 1980). In the third viewpoint, proponents of dyspedagogia claim that academic difficulties are caused by inadequate instruction (Epstein et al., 1980). Finally, the inactive learner hypothesis has emanated from the observation that these children frequently fail to use learning strategies that facilitate learning and that when they are taught these strategies, they are able to perform almost as well as normally achieving children (Bender, 1987; Poplin, 1988; Sawyer et al., 1992).

2.1.2 Historical Perspective

The following historical perspective will trace the origins of the designation and development of the field of learning disabilities. As early as the nineteenth century, teachers and physicians described children who were unable to learn to read and write despite normal intellectual abilities (Opp, 1994). These children could not be classified as having mental retardation but their identification and recognition for specific delivery services was not forthcoming in the United States until the mid 1960s.

Similarly to other human sciences, the field of learning disabilities has evolved through four historical phases: a foundation phase {1800-1930}, a transition phase {1930-1967}, an integration phase {1960-1980} and a contemporary phase {1980-present} (Lerner, 1993). In the foundation phase {1800-1930}, German neuroscientists such as Wernicke, Litchtein, Berlin, Goldsheider and Liepmann investigated aphasia, speech, reading and writing disorders linked to brain damage (Opp, 1994). A leading theory emerged: an impairment in the ability to communicate be it verbal or written resulted from the disruption of neural pathways (Opp, 1994).

Brain research was pursued into the 20th century by Kurt Goldstein who studied brain-injured soldiers . He reported certain behavioral characteristics of these soldiers which were also present in children with learning difficulties studied by Strauss and Werner (cited in Feagans, 1987): forced responsiveness to stimuli, figure-ground confusion, perseveration, hyperactivity, meticulousness and catastrophic

reaction. These characteristics are still used in present day diagnostic interviews and tests with these children (Feagans, 1987).

The transition phase {1930-1960} was highlighted by the work of two individuals who investigated the neurological and educational deficits of children with learning disabilities; Samuel Orton and Alfred Strauss. Samuel Orton, a neurologist, hypothesized that dyslexia originated in a lack of cerebral dominance which impeded the development of language (cited in Lazarus, 1990). Strauss, on the other hand, established a distinction between two types of mental retardation: endogenous (inborn) and exogenous (resulting from brain insult). He later collaborated with Laura Lehtinen to devise special learning environments for these "brain-injured" or exogenous children (cited in Feagans, 1987). The following principles were recommended: a) optimal structure, b) reduction of space, c) reduction of all irrelevant stimuli and d) use of bright and attractive instructional material.

As the LD field progressed towards the integration phase {1960-1980}, a prominent educator named Cruickshank studied intellectually normal children who also demonstrated some of the behavioral characteristics manifested by "brain-injured" children (Feagans, 1987). He adopted Strauss' stark learning environments in the hope of enhancing the learning of these highly distractible youth. In 1963, Dr. Samuel Kirk officially labeled the field of "learning disabilities" in support of converging information from such disciplines as neurology, psychology and education, and

pressure from parental associations (Moats & Lyon, 1993). Subsequently, the passing of the American Public Law, PL 91-230, 1969, which asserted the rights of individuals with LD to specific instructional intervention, provided further support to the establishment of this field. During this phase, school programs for children with LD began to flourish (Lerner, 1993).

Entering the contemporary phase {1980- present} student-type distinctions were refined and remedial services transformed (Lerner, 1993). Mild and severe learning disabilities were differentiated. Attention deficit disorders with and without hyperactivity have been recognized as specific conditions independent of a learning disability, although occurring more frequently in this group of children (Feagans, 1987; Moats & Lyon, 1993). Furthermore, educators presently agree that cultural and linguistic diversity requires specific intervention for adequate learning. It has been demonstrated that there is an overrepresentation of immigrant children in the LD group (Lerner, 1993). Changing administrative arrangements have influenced placement into special classes or mainstreaming and service delivery such as free-flow teaching and collaborative consultation for these children (Lerner, 1993). To better understand the link between the motor behavior of these children and their learning patterns, the following section describes their educational and motor characteristics.

2.1.3 Educational Characteristics

Learning disabilities encompass a wide range of difficulties which underscores the fact that each one of these children is unique. Yet, some general learning patterns have been observed. The following are some of the major findings in the cognitive domain: failure to use cognitive strategies (Ellis, Deshler, Lenz, Schumaker & Clark, 1991; Giordano, 1982; Sawyer et al., 1992; Torgesen, 1980; Torgesen & Goldman, 1977), short-term verbal memory deficits (Snow, 1992; Torgesen & Goldman, 1977) and dysfunctional mental flexibility and planning skills (Snow, 1992). These children also tend to be field dependent in their cognitive approach to learning (Lazarus, 1990) meaning that they fail to sample fully from the available cue set. They approach learning as spectators, resorting to trial and error strategies instead of focussing on processes and relationships. Subtyping children with LD for educational purposes acknowledges the diversity found within LD.

Educational practice has divided LD into three groups: 1) reading disability or dyslexia, 2) arithmetic disability or dyscalculia and 3) reading and arithmetic disability (Shafrir & Siegel, 1994; Shalev & Gross-Tsur, 1993). For example, in Shafrir and Siegel (1994), both the reading disability and the reading and arithmetic disability groups displayed deficits in phonological processing, vocabulary spelling and short term memory. However, these deficits were not present in the arithmetic disability group. Finally, a spatial visual deficit was detected in the reading and

arithmetic disability and the arithmetic disability groups only. This research concludes that certain learning outcomes are associated with specific types of learning disabilities. The same is also true for motor behavior. Certain subgroups of children with LD have no motor difficulties whatsoever while others have a developmental coordination disorder (Haubenstricker, 1982).

Motor Training Used to Improve Academic Standing

Attempts to improve academic performance through motor training became popular in the 1960s. Following in the footsteps of Piaget, Delacato and Kephart, Marianne Frostig created a Perceptual-Motor Training Program (Frostig & Horne, 1964) based on Luria's concept of pairing a weak psychological function with a strong one so that new connections would be created in the brain (Frostig, 1972). Children with LD had evidenced disturbances in visual perceptual abilities, figure-ground perception and integrative abilities. However, the transfer of perceptual-motor training to academic skills was not demonstrated (Cratty & Martin, 1969; Kavale & Mattson, 1983; Reid, 1982) and even the perceptual-motor skills of these children did not show significant improvement with these programs (Kavale & Mattson, 1983).

Similarly, A.J. Ayres (1979), considered a leader in occupational therapy, brought forth a remedial program called Sensory Integration Therapy (SI) which was first aimed at children with mental retardation but was eventually used with children having LD. This program was conceived to provide vestibular stimulation, which in

turn would remediate the perceptual and integrative disturbances of children with LD and allow them to learn more efficiently (Ayres, 1972b as quoted in Hoehn & Baumeister, 1994). Critical analysis of studies of Sensory Integration therapy revealed that no unique benefits were provided to these children and that this remedial therapy was not effective (Hoehn & Baumeister, 1994). Therefore, the association between remediating motor delays with the view of improving cognitive processes has not been established.

Children with LD became a concern for physical educators because of their different learning styles and behavioral habits in the gym. Professionals in the adapted physical education field now focus their attention on the identification and solution of the psychomotor problems of these children (Sherrill, 1993).

Adapted Physical Education for Children With LD

In the field of physical education, Sherrill (1993) was the first author to write a chapter on LD in a physical education textbook (Sherrill, 1972). She relied on the works of Cruickshank (managing learning environments) and Kephart who stressed balance activities and imitation of movement games, to create a pedagogical approach for children with LD.

Another prominent physical educator, Bryant J. Cratty (in the early 70s), at the University of California at Los Angeles, contributed to the perceptual-motor pedagogy by recommending highly structured movement experiences to remediate clumsiness

and games using letters and numbers to supplement classroom instruction. He rejected the notion that perceptual-motor training led to academic improvement (Cratty & Martin , 1969).

More recently, authors in the adapted physical education domain have also devoted chapters of their workbooks to learning disabilities (Craft, 1990; Horvat, 1990). Bluechardt and Shephard (1995) have reported the usefulness of motor and social skills training programs for children with LD. These authors addressed the need for improvement of self-worth and social skills with these children because poor motor skills have led to peer rejection and limited self-worth (self-esteem).

2.1.4 Motor Characteristics of Children With Learning Disabilities

Along with deficits in cognitive processes, these children are also at risk of demonstrating motor impairments and/or low motor proficiency (Lazarus, 1990) which in turn may interfere with their social integration (Mender, Kerr & Orlick, 1982). Inefficient movement for a child means having poor play skills, difficulty handling changes in the environment and relating with same age peers (Bouffard, Thompson & Watkinson, 1992; Gruber, 1969; Reid, 1982) In turn, avoidance or limited participation in physical activity may lead to reduced fitness (Sherrill, 1993; Bryan & Smiley, 1983) and passive lifestyle (Margalit, 1984).

For the past twenty years, literature regarding learning disabilities has indicated

the presence of motor difficulties ranging from subtle disturbances to a developmental coordination disorder (DCD) or physical awkwardness within this group (Ayres, 1979; Bruininks & Bruininks, 1977; Cartwright, Cartwright & Ward, 1985; Cratty, 1980; Cratty & Martin, 1969; Freides, Barbati, van Kampen-Horowitz, Sprehne, Iversen, Silver & Woodward, 1980; Frostig, 1972; Golick, 1978; Gruber, 1969; Henderson & Sugden, 1992; Jacklin, 1987; Kelly, 1990; Losse, Henderson, Elliman, Hall, Knight & Jongmans, 1991; Mender et al., 1982; Reid, 1981, 1982; Sherrill & Pyfer, 1985; Smith, 1985; Tansley, 1986; Wall, 1982; Womack & Womack, 1982).

Certain motor variables have come under close scrutiny. The variables are: body awareness, spatial orientation, bilateral coordination, laterality, balance, movement overflow, visual motor difficulties, dissociation and temporal organization and auditory stimulation.

Body awareness, spatial orientation and bilateral coordination

Children with LD frequently demonstrate delay in body awareness (Cratty & Martin, 1969; Frostig, 1972; Footlik, 1970; Kelly, 1990) which is related to difficulties of perception of position in space and of directionality (Frostig, 1972; Golick, 1979; Lazarus, 1990; Sherrill, 1993). This difficulty was partially blamed on lack of lateral dominance which was held to be a crucial part of cognitive development (Lazarus, 1990). Children with LD were thought to be incapable of achieving lateral dominance

at an early age and neurologists hypothesized that consistent sidedness in learning would create improved lateralization in the child (Lazarus, 1990). However, no formal demonstration has emerged indicating that the degree of handedness is related to the degree of lateralization (Lazarus, 1990). Yet, consistency of handedness and footedness appear to be related to bilateral coordination (Bruininks & Bruininks, 1977). Bilateral coordination, which implies the simultaneous or alternating use of upper and lower limbs is also delayed in these children relatively to same aged peers (Bruininks & Bruininks, 1977; Sherrill & Pyfer, 1985).

Balance

These children experience difficulties with balance when tested on static balance tests (Bruininks & Bruininks, 1977; Sherrill & Pyfer, 1985; Mender et al., 1982; Cratty & Martin, 1969; Freides et al, 1980). However, Miyahara's (1994) study indicated that about 7% of the sample had *extremely poor* balance along with 25.5% who did poorly on all gross motor subtests including balance. The remainder of the LD children did not have motor difficulties.

Movement overflow

Movement overflow refers to extraneous movement irrelevant to the intended motor function. These extraneous movements usually disappear with the maturation of the central nervous system, although they are observable in young children. However, in children with LD they are apparent for a significantly longer period (Foo-

tlik, 1970; Lazarus, 1990, 1994; Tansley, 1986). The persistence of movement overflow could indicate developmental delay of the central nervous system (Cohen, Taft, Mahadeviah & Birch, 1967; Wolff, Gunnoe & Cohen, 1983). Furthermore, movement overflow is associated with lack of inhibitory control (Lazarus, 1990, 1994). This control mechanism allows the child to gauge the required amount of force or speed in a movement (Lazarus, 1994). To execute a skilled action, movement constancy and consistency are required (Wall, McClements, Bouffard, Findlay & Taylor, 1985). Acquiring this constancy and consistency has proven to be more challenging to children with LD as reported in the variability of their performance results when compared to same age peers (Brunt & Distefano, 1982; Brunt et al, 1983).

Visual-motor difficulties

Although some have assumed that faulty visual perception is the cause of poor motor functioning, research has attempted to determine whether these children's difficulties are visual, perceptual or motor in nature (Brunt & Distefano, 1982; O'Brien, Cermak & Murray, 1988; Punnett & Steinhauer, 1984). Examining the visual-perceptual and visual-motor scores of "clumsy" and "non-clumsy" children with LD and Normally Achieving children, differences in both areas were observed between NA and "clumsy" children but none between "clumsy" and "non-clumsy" children with LD (O'Brien et al., 1988). It was reported in another study, that the

disturbance lay in both the motor-coordinative component and the integration between the visual-perceptual and motor-coordinative components (Mattison, McIntyre, Brown & Murray, 1986). Responding to a visual stimulus for changing running direction proved to be a challenge to these children as they increased their reaction time and movement time (Brunt & Distefano, 1982). The control subjects demonstrated an increase in reaction time but very little variation in running speed (movement time). This would indicate that children with LD have more difficulty organizing a motor response to unexpected change.

Eyesight (Kerr & Hughes, 1987; Mon-Williams, Pascal & Wann, 1994) and visual perception (Rosblad & von Hofsten, 1994) of children with developmental coordination disorder has been reported to be similar to that of controls. Ophtalmic difficulty did not explain problems in movement control. Yet, a study concerning visual memory did identify significant differences with children having DCD when a 15 s delay was imposed before being allowed to reproduce a graphical task (Dwyer & McKenzie, 1994). This study showed differences in visual rehearsal strategies. It would appear that the integrative difficulties between intended and produced action observed by Mattison et al. (1986) may lie in visual memory deficits rather than visual or visual-perceptual deficits. To conclude this section, studies concerning visual, visual motor and visual perceptual deficits have indicated that the visual and visual perceptual functioning of children with LD were intact (Brunt & Distefano, 1982;

Mon-Williams et al., 1994; O'Brien et al., 1988; Punnett & Steinhauer, 1984; Rosblad & von Hofsten, 1994). The deficit appears to lie in the organization of the motor response (Brunt & Distefano, 1982; O'Brien et al., 1988) and in visual memory deficits (Mattison et al., 1986).

Dissociation

Dissociation is the ability to grasp the relationship between parts that make up wholes and is usually not fully developed before the age of 9 (Sherrill, 1993). However, delays in this ability are more apparent in children with LD (Sherrill, 1993). This characteristic is associated with their deficits in figure-ground perception (Feagans, 1987; Frostig, 1972; Sherrill, 1993) which refer to difficulties in picking out an object from a complex background or confusion with the terms near, far, high and low.

Temporal organization and auditory stimulation

Body movements require exact timing and proper sequencing of components especially when accuracy, speed, power, timing and force are involved. Weakness in timing has been recognized through tests of synchronized rhythmical tapping (Bruininks & Bruininks, 1977), foot patting (Kendrick & Hanten, 1979) and teaching of dance or rhythmical activities with these children (Sherrill, 1993). Children with developmental coordination disorder have also exhibited more variation in perfor-

mance than controls in maintaining a set rate of tapping and accurately judging time intervals (Williams, Woollacott & Ivry, 1992). Observations of difficulties in recall and in proper sequencing of movements were noted by practitioners and found to be alleviated by the use of verbal rehearsal (Kowalski & Sherrill, 1992; Lazarus, 1990; Sherrill, 1993).

Children with LD were asked to perform a reciprocal tapping task using a stylus to touch 16 different target combinations (Kerr & Hughes, 1987). Their initial, progressive and final results were lower than that of normally achieving children. However, their progress at handling the increased difficulty of the task was similar to that of normally achieving children. The results lead Kerr and Hughes (1987) to conclude that children with LD had difficulties handling information at the onset of the task. Upon examining the motor profile of children with LD, the variability of their performance even with extensive practice highlights the necessity of investigating their particular needs. While some of these children have poor body awareness, others may have balance or coordination deficits and others are as successful as normally achieving children in physical activities (Miyahara, 1994). Recognizing that a subgroup of children with LD are more at risk of displaying motor difficulties, attempts have been made to find a relationship between certain cognitive disabilities and motor disturbances.

Subgrouping Based on Motor Characteristics

When subgrouping these children for motor purposes, researchers have grouped them either by specific cognitive disabilities such as dyslexia (reading disabled) or dyscalculia and provided a motor profile by specific learning disability (Golick, 1978; Lazarus, 1990), or by considering all LD and testing individuals on specific motor skills such as balance, bilateral coordination and eye-hand coordination, in order to subgroup them according to motor strengths and weaknesses (Bruininks & Bruininks, 1977; Haubenstricker, 1982; Miyahara, 1994; Sherrill & Pyfer, 1985).

Golick (1978), from clinical experience, identified physical awkwardness in the group of children having difficulties with space, time and numbers but reported good body management within the group having language disorders and specific dyslexia. Lazarus (1990) noted three subgroups: a reading disabled/dyslexic group displaying subtle motor deficits, a cluster of children who exhibit visual-spatial-motor difficulties and a group displaying no motor incompetence whose learning disabilities were associated with affective factors.

Bruininks and Bruininks (1977) were the first authors to confirm the motor dysfunctions of children with LD as a group. Freides et al. (1980)also reported significant deficits on measures of postural and equilibrium reflexes as well as skills. Pursuing this research, Sherrill and Pyfer (1985) reported three subgroups within their sample of children having LD: 13% were severely delayed in their motor functions,

75% scored average on some tests but below average on other tests and the remaining 12% demonstrated no motor delays. A recent study, using balance as the primary distinctive trait for subgrouping LD helped establish four distinct profiles based on gross motor functions (Miyahara, 1994). In a sample of 147 students with LD, 43.6% of the children were free from severe motor problems, 25.5% were poorly coordinated (poor performance in all gross motor subtests) and 23.6% had good balance but deficits on other motor tests. The remaining 7.3% had extremely poor balance skills but performed well in strength and ball skills and displayed average results in running speed and bilateral coordination. Taylor (1982) also found that within the LD group of children 27.7% of them had significant motor difficulties. Furthermore, their difficulties range from mild to severe and can be found in one specific area such as balance or in several, such as gross motor, fine motor and balance.

Fitness and Leisure

One of the consequences of early movement difficulties and limited positive social interactions in play situations, is the risk of developing a passive lifestyle (Bouffard et al., 1992; Margalit, 1984; Sherrill, 1993). Margalit (1984) observed that these children spent more time in passive and solitary activities and were more dependent on their parents for leisure time activities. During free play at school, Bouffard et al. (1992) noticed that children with motor difficulties were less frequently

interacting with peers, were much less active in free play and tended to avoid using large playground apparatus. Their fitness levels were reported to be lower than normally achieving children as well (Bryan & Smiley, 1983; Sherrill, 1993).

In conclusion, it has been shown that children with LD are at risk of demonstrating inefficient movement, and motor learning is more challenging to them than to normally achieving children. Their difficulties range from mild to severe and can be found in one specific area such as balance, or in several areas, such as gross motor, fine motor and balance. The exact causes are still unknown. However, research points to weak verbal and visual memory skills (Kowalski & Sherrill, 1992; Mattison et al., 1986; Snow, 1992; Torgesen, 1980; Torgesen & Goldman, 1977), lack of effective practice and exposure to physical activities (Bouffard et al., 1996). This situation, in turn, may hinder their affective, social and physical well-being. Furthermore, a particular subgroup of these children, up to 27.7% of them (Taylor, 1982) may be physically awkward which, if left unremediated, may persist into adulthood (Losse et al., 1991).

Learning Disabilities and Developmental Coordination Disorder

Physical awkwardness or developmental coordination disorder(DCD) is a more frequently occuring syndrome in children with LD. Henderson and Sugden(1992) estimated that 15% of the normally achieving child population have moderate to severe movement difficulties. In groups of children with LD, over 25% of them display this

syndrome (Mihayara, 1994; Taylor, 1982).

The developmental coordination disorder designates the condition of physically awkward children who have no neuromuscular problems but "fail to perform culturally-normative motor skills with acceptable proficiency." (Wall, 1982, p. 257). Originally, Gubbay (1978) titled clumsiness of limbs or gait or awkwardness as developmental apraxia. The term "clumsy" has been frequently used in past literature to designate subjects having these motor dysfunctions (Freides et al., 1980; Maeland, 1992; O'Brien et al., 1988; Shaw, Levine & Belfer, 1982; Williams et al., 1992). Children with DCD exhibit deficits in motor planning which refers to the ability to initiate, correctly sequence, and terminate a chain of movements (Gubbay, 1978; Haubenstricker, 1982; Keogh, Sugden, Reynard & Calkins, 1979; Wall, Reid & Paton, 1990). Hence, they require more time to learn a new skill when compared to age matched peers and are persistently slower in reaction and movement time than their peers (Missiuna, 1994; van Dellen & Geuze, 1987). Henderson and Sugden (1992) posit that these children are lagging in movement skills necessary for school achievement and that the degree of severity and diversity of impairments will vary from one child to the next. However, they contend that children with severe coordination deficits will commonly display disturbances in almost any motor task presented to them. Motor skills appear to lie on a continuum from gross to fine motor and many tasks involve the interplay of both types of movement, for example, catching

a ball. Furthermore, the observation of gross motor coordination only (often the case in physical education settings) cannot appraise accurately a child's motor skills. Thus, they have created a comprehensive screening test, the Movement ABC (Henderson & Sugden, 1992) which is the most recent adaptation of the TOMI test (Stott, Moyes, & Henderson, 1972) and covers manual dexterity (fine motor tasks), ball skills, static and dynamic balance items.

The link between *a subgroup of children* with LD and children with DCD is that they both demonstrate difficulties in reaching movement consistency (Brunt & Distefano, 1982). Movement consistency, which is the prime objective of motor learning is more of a challenge to children with DCD (Marchiori, Wall & Bedingfield, 1987; Missiuna, 1994; Wall et al., 1990) as well as for children with LD (Brunt & Distefano, 1982). Investigation into the causes of DCD has brought forth different hypotheses: limited knowledge base of motor skills (Wall, 1982), the lack of kinaesthetic sensitivity hypothesis (Bairstow & Lazlo, 1981), and disturbances of the central timekeeping mechanisms (Williams et al., 1992). Wall's (1982) knowledge-based approach contended that these children lacked the practice, declarative knowledge and affective attitude required to promote appropriate motor development.

Kinaesthetic sensitivity was demonstrated to be less well processed by clumsy (physically awkward) children by Bairstow and Laszlo's kinaesthetic sensitivity test (Laszlo & Bairstow, 1985a). According to these authors, such a deficiency prevents

them from adequately performing skilled motor acts. This theory was later questioned by Lord and Hulme (1987) who found the kinaesthetic sensitivity test to be an ineffective diagnostic tool, due to poor reliability. Laszlo and Sainsbury (1994) have further pursued research using the same test as in the research of 1985a. They reported that over 50% of school children, in their sample, entering school had not yet reached kinaesthetic readiness needed to acquire and perform skills expected in Western culture. Furthermore, they have indicated that kinaesthetic sensitivity training improved significantly test results on a retest done a year later. These authors persist in contending that kinaesthetic developmental delay is the causative factor of clumsiness (physical awkwardness; developmental coordination disorder). However, in view of Lord and Hulme's (1987) work, one may question the results obtained by Laszlo and Sainsbury (1994) due to the use of a test that is not reliable and has not yet been modified. Therefore, the assumption that children who demonstrate clumsiness lack kinaesthetic sensitivity has yet to be established. Recently, disturbances of the central timekeeping mechanism were reported in children with DCD through tests of timed rhythmic movement and perception of time intervals (Williams et al., 1992). These children showed deficits in both motor and perceptual timing which were not due to general auditory processing. The variable performances of children with DCD would appear to lie in the variability of the central timekeeping mechanism which is responsible for signaling the onset of movement responses. How these children react

emotionally to testing may also partially explain their variance of performance (Henderson & Sugden, 1992).

It has been shown that children with DCD are afflicted with low self-esteem (Stott, Henderson & Moyes, 1986) and even more so if they have both LD and DCD (Shaw et al., 1982). Children with LD and DCD were more unhappy and had fewer friends of the same sex than the other children with LD (Shaw et al.,1982).

The act of learning is constantly influenced by many factors. When looking at mastery orientation, Schunk (1989) indicated that the most salient predictors of what and how rapidly students learn are : 1) cognitive abilities, 2) outcome expectancies and beliefs, and 3) value placed on these outcomes. Licht and Kistner (1986) further reported that teacher feedback and class goal structure are also critical features influencing educational progress for children with LD. The following section will explain motivational tendencies of these children and how they compare with children who are mastery oriented.

2.1.5 Motivational Characteristics

While children with LD may do poorly in academic subjects and consider themselves as weak students, they are able to differentiate their abilities in other domains such as games and sport (Griffiths, 1975). Low self-concepts in the academic domain do not necessarily mean low self-concepts in the social and physical

domains, as children are able to assess themselves differently from one domain to another (Harter, 1980, 1982; Montgomery, 1994). Regrettably, however, low persistence at a task (Bender, 1987; Yong & McIntyre, 1992) and disregard for effort in the academic context (Licht & Kistner, 1986; Pearl, 1982) seems to prevail in physical endeavours (Kelly, 1990). An important question is how to motivate these children to put in the effort required for improvement and success?

According to Nicholls' developmental theory of children's motivation, concepts of ability and effort evolve as a function of the child's age (Nicholls, 1984a). A young child believes that intelligence and ability (in a particular domain) can change and be improved upon. As children get older (10-11) they begin to construe intelligence and/or ability as fixed attributes, therefore, recognizing their own limitations. They also begin to recognize that effort may not compensate for lack of ability in developing greater levels of competence. Finally, around the age of 12-13 the child becomes convinced of these limiting factors, and that effort and ability are completely differentiated.

Children with LD who experience early and repeated failures in school respond differently from normally achieving children in their attributions for success and failure (Deci & Chandler, 1986; Deci et al., 1992; Fuhler, 1991; Griffiths, 1975; Montgomery, 1994; Pearl, 1982; Yong & McIntyre, 1992). These children are low in motivation for school work (Licht & Kistner, 1986; Yong & McIntyre, 1992), have trouble

feeling competent (Deci et al., 1992), lack persistence at a task (Bender, 1987; Crandall, Katkovsky & Crandall, 1965) have low self-esteem in the academic arena (Griffiths, 1975), are inactive in their learning (Bender, 1987; Poplin, 1988; Torgesen, 1977), have difficulty feeling responsible for their successes or failures (Crandall et al., 1965; Fuhler, 1991; Pearl, 1982) and attribute success and failure to luck or task ease (Pearl, 1982). Deci et al. (1992) found that children with LD particularly needed to focus on competence and involvement variables, that is, situations they can control in order to regain positive self-perceptions. Of particular interest for the present study is their attributional styles for success and failure.

Mastery Orientation Versus Learned Helplessness

Attribution theory (Weiner,1974) explains human behavior by the causal perceptions responsible for what happens to oneself in the day-to-day environment. When comparing mastery oriented children and learned helpless children, the former feel responsible for successes and usually attribute failures to lack of effort (Diener & Dweck, 1978; Dweck, 1986; Dweck & Repucci, 1973; Elliott & Dweck, 1988). The latter tend to give up in the face of difficulty and failure and look for causes of their failure outside of their own control rather than solutions to the problem at hand. Children with LD have been reported to attribute success to luck or task ease and to blame failure on others such as the teacher (Diener & Dweck, 1978; Fuhler, 1991;

Licht & Kistner, 1986; Pearl, 1982; Pintrich, Anderman & Klobucar, 1994). Fortunately, attributions can be redirected with learned helpless children so that they will consider effort as essential to their success (Diener & Dweck, 1978).

Learning Goals and Outcome Goals

Goal structure in class may also influence the learning behavior of children with LD (Licht & Kistner, 1986). In physical education classes and in elite sport , an individual's goal orientation will modify the way a task will be addressed (Papaioannou, 1995). This will depend on the individual's spontaneous tendency to be learning oriented (task involved) or outcome oriented (ego-involved) (Burton, 1993; Weinberg, 1994) and also on how the environment is managed by the person in authority, either promoting a learning or an outcome orientation (Papaioannou, 1995). Researchers have often distinguished between learning and outcome goals. Learning goals are goals set for an individual to improve at a skill or task. Learning goals enhance experimentation and exploration of problem solving and allow for trial and error.

Outcome goals are fixed goals that are normative, therefore, set in relation to others, highlighting social comparison. For example, children need to demonstrate competence similar to same aged peers in a physical activity in order to be motivated to pursue such activity, otherwise, intrinsic motivation for the activity will decrease (Vallerand, Gauvin & Halliwell, 1986). In one experiment, Elliott and Dweck (1988)

noted negative affect in performance goals and complete elimination of these reactions in the learning goals. In physical education, a combination of high learning and low outcome goal structure, (thus placing emphasis on mastering a task), sustained high levels of motivation in children of all levels of perceived ability (Papaioannou, 1995).

Children's Sport

In children's sport, the perception of demonstrated competence appears to be the key variable related to perceptions of success and failure (Duda, 1987). It has been shown that children are able to differentiate their perceptions of self-competence in different domains (Harter, 1978b). In sports and games, children can have feelings of competence without the feedback of adults; they appraise their ability according to the performance of same age peers (Harter, 1978b). Continued participation in the sporting domain is frequently linked to feelings of competence in the particularly activity (Duda, 1987) although social affiliation is also a major contributing factor in children's sport participation (Klint & Weiss, 1987). Feelings of competence can be generated by the achievement of task oriented goals or outcome goals (Duda, 1987). Wishing to defeat the opponent or surpassing an existing standard implies ego-involvement or an outcome goal orientation. According to Burton (1994), Danish and Hale (1983) and Gould (1986), doing so proves to be too difficult and demotivating for the participant. The participant should concentrate on improving technique or surpassing past performances which implies task orientation or learning goals. A task-

involved goal is one based on past performance and remains within one's control. Learning goals or task involvement have received further support in Duda's (1987) review of children's sport literature and in Papaioannou's (1995) study on favorable learning conditions in the physical education class. However, as far as optimal performance increments are concerned, Kyllo and Landers' (1995) meta-analysis of goal-setting indicated that participants who seek outcome goals in absolute terms outperform participants who are working on relative goals.

Setting goals can have aversive or beneficial effects depending on how goals are set and how well suited they are for the individual (Burton, 1993; Weinberg, 1994). Perceptions of one's ability may enhance or undermine one's goal acceptance (Nicholls, 1984a). High perceived ability individuals will prefer tasks at or above moderate difficulty levels because they do not expect to decline. Conversely, low perceived ability individuals may handle a task with one of three tendencies: (1) they are still committed to demonstrating high ability despite failures, (2) some are more certain that their ability level is low and lack commitment to demonstrate high ability, and (3) some are convinced that their ability level is low and will only accept easy tasks (Nicholls, 1984a).

Individuals and coaches-teachers should adjust goals, recognize what barriers are obstructing success (Danish & Hale, 1983) and how the goal-setter reacts to success-failure, that is, performance-orientation, success-orientation or failure-

orientation (Burton, 1993). Striving towards goal achievement, children with movement difficulties, when left unguided, tended to set either very easy, already achieved goals, or unnattainable goals which alleviated responsibility for failure or success (Henderson et al., 1989). Nonetheless, Vallerand and Reid (1990) have recommended the use of goal-setting as a self-regulator of action with special populations regarding motor behavior. To conclude, effective goal-setting requires the implication of the goal-setter and recognition of how that individual reacts to goal-setting in failure and in success situations in order to create the most favorable conditions for performance improvement (Burton, 1993; Locke & Latham, 1990; Weinberg, 1994).

2.2 Goal-Setting Theory

2.2.1 Introduction

Goal-setting is an endorsed method for motivating higher achievement in sport (Burton, 1984; 1993; Danish & Hale, 1983; Gould, 1986; Kyllo & Landers, 1995; Pemberton & McSwegin, 1989; Weinberg, 1994). Yet, until recently, limited empirical research on goal-setting in sports has failed to prove overall effectiveness. However, a meta-analysis of existing research produced by Kyllo and Landers (1995) indicated that goal-setting in sports and exercise produced significant effects over non goal-setting conditions.

The foundations of goal-setting theory lie in the work of Locke and Latham

(1990), in the business and industrial setting. Over 500 studies, in management and psychology have established the effectiveness of goal-setting (Locke & Latham, 1990). According to Locke and Latham (1985), goal-setting affects performance by directing activity, mobilizing effort, increasing persistence and motivating search for appropriate strategies. Bandura (1986) also recognizes goal-setting as a self-regulator of action.

Reaching goals enhances one's self-efficacy[1] and level of aspiration, which subsequently entice the individual to set new goals (Schunk, 1989). This psychological mechanism is consistent with contemporary motivation theory whereby motivation is dependent on developing and maintaining high perceived ability through consistent goal attainment (Elliott & Dweck, 1988; Nicholls, 1984a).

Bandura (1986) identified certain events that are likely to occur upon setting a goal. Once a goal is internalized, a need has been created to reduce the discrepancy between the present situation and the desired one. The effectiveness in achieving one's goals will depend upon **internal** and **external** mediators (Locke & Latham, 1990).

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1 self-efficacy is the judgement one makes about how well one will succeed at a new task based on past performance

2.2.2 Factors That Mediate Goal-Setting

Internal mediators include ability and the knowledge base of the task at hand (Burton, 1993), the perceived value of outcomes and commitment to them (Burton, 1993; Locke & Latham, 1985), perceptions of one's sense of control or responsibility (Bandura, 1986; Henderson et al., 1989), self-appraisal skills (Bandura, 1986), the level of self-efficacy and aspiration of the individual (Henderson et al., 1989) and goal orientation of the individual (Burton, 1994; Gould, 1986; Nicholls, 1984a). In this study, and in Locke and Latham's theory of goal-setting (1990), manipulation of the external mediators is a prime concern. Two internal mediators were observed, that is, goal commitment and self-efficacy through the assessment of the perceived physical self-competence scale.

External Mediators

External mediators are the factors which can be manipulated by individuals in authority such as teachers, parents, coaches, and bosses. These mediators include feedback of results, task difficulty,task complexity, self-determination of goals, group versus individual goals, and the use of learning or outcome goals. A goal-setting theory has emerged after more than 25 years of experimentation with external moderators. The main finding are that specific, difficult goals produce higher levels of performance than easy goals, no goal or do-your-best (Locke & Latham, 1990).

2.2.3 The Application of Goal-setting in Sports and Exercise

In the sport and exercise realm, tasks used for goal-setting research have been quite varied, ranging from simple tasks such as sit-ups (Bar-Eli et al., 1994; Hall & Byrne, 1988; Tenenbaum et al., 1991; Weinberg et al., 1991) to complex tasks such as juggling (Anshel et al., 1992; Barnett, 1977; Hollingsworth, 1975). Within a more complex task, motivational effects become obvious in later stages because it takes the individual more time to master new task strategies (Locke & Latham, 1990). Therefore, short-term experiments may not indicate the effects of goal-setting on a complex task. One of the underlying difficulties encountered in this type of research is creating a study in which control subjects are not setting goals (Locke, 1991; Locke, 1994; Weinberg & Weigand, 1993, 1996). Feedback or knowledge of results is often a motivating factor for sport participants and it is difficult to withhold this information, thus preventing participants to set goals in do-your-best conditions (Weinberg & Weigand, 1993, 1996).

Some authors have explored several mediators of goal-setting at the same time such as effort and ability attributions (Wraith & Biddle, 1989) and effects of goal difficulty on intrinsic motivation (Anshel et al., 1992; Bar-Eli, Levy-Kolker, Tenenbaum & Weinberg, 1992; Weinberg et al., 1991) while others have simply examined the main effect of setting specific goals (Barnett & Stanicek, 1979; Boyce, 1990; Edwards, 1988; Hollingsworth, 1975).

Goal Specificity

Goal specificity refers to clear attainable standards that designate the type and amount of effort required to attain them. These standards produce higher levels of performance than general intentions to do one's best (Locke & Latham, 1990). Specific performance goals serve to motivate the unmotivated and to foster positive attitudes towards specific tasks or activities (Bandura, 1986). Burton (1993) further points out that specificity will tend to reduce the variance in performance. However, to observe the differences between goal-setters and non goal-setters is somewhat more difficult in the sport domain due to spontaneous goal-setting which tends to confound results (Locke & Latham, 1985).

Of 16 studies dealing with varied skills and done with a variety of subjects, ten demonstrated the effectiveness of goal-setting compared to a control group (Bar-Eli et al., 1994; Barnett & Staniceck, 1979; Boyce, 1990; Edwards, 1988, Erbaugh & Barnett, 1986; Erffmeyer, 1987; Hall & Byrne, 1988; Hall et al., 1987; Tenenbaum et al., 1991; Weinberg, Bruya, Longino & Jackson, 1988). Three studies involving juggling (Anshel et al., 1992; Barnett, 1977; Hollingsworth, 1975) failed to show differences between goal-setting groups and do-your-best groups. Since juggling may be considered a complex task, more time may have been required for goal-setting subjects to outperform the do-your-best subjects at this task. It may also be assumed that, in such a task, all participants were setting goals in view of mastering the task.

Furthermore, the goal effectiveness curve flattens as individuals approach the limits of their ability (Locke & Latham, 1990). This may explain the non-significant results of the following studies. No differences were found between military trainees in a two-month summer training camp who were tested on physical tasks with and without goal-setting (Bar-Eli et al., 1992). One might also suggest that the do-your-best group of trainees may be setting goals for themselves as social comparison was not avoided. Weinberg et al.(1991) conducted two experiments which did not support the effects of goal-setting. The first experiment involved elementary school children in an 8 week sit-up program. The second experiment tested university undergraduates on a 3-minute maximal basketball set shot test, consisting of 5 consecutive trials with rest in between. In the first experiment, children were given their goals in private conferences and told not to reveal them. However, all goal groups practised and were tested in the same gymnasium at the same time. This means that the do-your-best and easy-goals condition were practising and being tested together. Therefore, social comparison or competition may have been present which may have acted as a powerful motivator. Thus, all groups may have been setting goals. In the second experiment, Weinberg et al.(1991) supplied a questionnaire to find out whether subjects in do-your-best condition were setting goals, and it was found that 88% of these subjets were setting specific goals after Trial 1.

Goal Difficulty

For research purposes, Locke (1991) emphasized that specific goals must be difficult (only 10% of the subjects can reach them) because easy goals tend to lead to lower performance than do-your-best and moderate goals lead to the same level as do-your-best goal. This postulate has been found to be true in industrial and psychological research (Locke & Latham, 1990). In the sport realm, this hypothesis has not been supported; only moderate goals (10 to 50% chance of success) resulted in a mean effect size significant from zero (Kyllo & Landers, 1995). Burton (1993), Gould (1986) and Danish and Hale (1983) have contended that moderately difficult goals provide the best grounds for improvement in sport performance. Weinberg and Weigand (1996) still dispute that this not yet clear.

Positive effects of difficult specific goals were found in three maximal sit-up experiments with children (Weinberg et al., 1988), youth (Bar-Eli et al., 1994) and adults (Tenenbaum et al., 1991). Weinberg et al., (1988) found that the specific goal groups which were set to increase by 4% in the short-term and by 20% in the long-term outperformed the do-your-best group. Bar-Eli et al.(1994) reported that the short-term (8% increase) plus long-term (40% increase) goal group outperformed the long-term (40%) goal group. Tenenbaum et al. (1991) obtained similar results to Bar-Eli et al. (1994) whereas the combined goal group (short-term plus long-term goal group) outperformed the short-term and long-term only groups. The goal increases

were 8% for short term and 40% for long-term. The results indicated that the short-term plus long-term group increased by 29.43% through 10 weeks, the short-term group improved by 20.7% and the long-term group improved by 10.5% The do-your-best and control groups did not progress significantly.

Two other studies involved instructional class-like situations and proved goal-setting effectiveness according to goal difficulty. Boyce (1990) examined riflery instruction with university students. A perfect trial test would result in 50 points. Each shooter attempted 5 shots at a target containing six concentric rings; the outermost ring scored 5 points, the next ring 6 points and so forth to the innermost ring which was worth 10 points. High performance goals were established according to previous riflery classes, National Rifle Association and research advocating high performance goals: 25 points or better on Trial 1, 30 points or better on Trial 3, 40 points or better on Trial 4 and 40 points or better on Trial 5. The goal-setting group outperformed the control group on Trials 2, 3, 4, 5 and retention. Barnett and Stanicek (1979) successfully examined goal-setting within a 10-week archery class whereby the goal-setting group outperformed the no goal group. Goal difficulty was not specified as participants were asked to set themselves numerical goals accompanied with individual verbal goals. Another study examining hand-grip strength by Hall et al. (1987) revealed a significant difference between a do-your-best condition and the two goal-setting conditions. However, subjects in the moderately difficult goal condition

(improve by 40 s) and in the most difficult goal condition (improve by 70 s) performed similarly. This demonstrated that it is still difficult to determine optimal levels of difficulty to stimulate physical performance.

Locke and Latham (1985) have added the caveat that exceedingly difficult goals would lead to discouragement and poor performance and that unattainable goals are abandoned when failure to meet them brings aversive consequences. Burton (1984) has agreed with this statement when using goal-setting with collegiate competitive swimmers. However, four studies examining extremely difficult goals in the sport realm did not find any differences among goal-setting groups nor deterioration of intrinsic motivation within the extremely difficult goals group (Anshel et al., 1992; Bar-Eli et al., 1992; Weinberg, et al., 1988; Weinberg et al., 1991). It must be noted that these experiments were short-term and failure of attaining goals may not have produced aversive consequences. Furthermore, upon examining each individual subject, all four studies reported significant improvement with certain subjects, null increases and decreases in performance with others suggesting that, within a group, there may be differences between individual reactions and one may not conclude that extremely difficult goals are performance enhancing for everyone. In long-term research with swimmers, Burton (1984) demonstrated that goals must be challenging yet must be attainable, to promote self-efficacy and persistence. This indicates that individual differences such as skill level should be of concern when using

goal-setting (Burton, 1993; Kyllo & Landers, 1995; Weinberg, 1994).

2.2.4 Children and Goal-Setting

Goal-setting research has shown that children are quite receptive to the use of goal-setting. A group of very young children (5 to 7 years) mastered a jumping task over a horizontally rotating bar with the assistance of goal-setting (Erbaugh & Barnett, 1986). Erbaugh and Barnett (1986) also observed significant behaviour differences between the goal-setting group and the non goal-setting groups. The children in the goal-setting condition appeared much more aware of task demands and displayed maximal effort and task persistence. They also used a self-evaluative counting strategy which was unnoticed within the do-your-best group. A group of older children between the ages of 9 to 11 years demonstrated significant improvement in their performances of a hockey flip shot task with the use of goal-setting (Edwards, 1988). Weinberg et al. (1988) also indicated significant performance differences for children setting goals in a maximal sit-up task.

Goal difficulty is directly influenced by goal proximity. Proximal (short-term) subgoals should be challenging but clearly attainable through extra effort in the pursuit of a far more demanding long-term goal (Bandura & Schunk, 1981; Burton, 1993; Danish & Hale, 1983; Gould, 1986; Locke & Latham, 1990; Weinberg, 1994). It is expected that perceived difficulty of the long-term goal will change as subgoals are reached (Bandura, 1986). Danish and Hale (1983) and Gould (1986) illustrate this

concept as climbing up a staircase to the door of success. Reaching each stair is like accomplishing a subgoal. As each subgoal is reached, self-efficacy is enhanced and the attainment of the ultimate final goal appears more and more accessible.

Goal Proximity

The effectiveness of goal-setting depends on how far into the future the goals are projected. Reaching proximal goals enhances self-efficacy and promotes persistence at a task (Bandura & Schunk, 1981). When long-term goal-setting was used to produce self-directed change in refractory behaviour such as alcoholism and weight reduction, failure was more frequent (Bandura, 1986). Daily goals produced significantly better results (Bandura, 1986).

Children (7 to 10 years of age) with very poor math skills were assigned to one of four conditions, in a study to promote the learning of mathematics: (1) proximal goals, (2) distal goals, (3) no goal and (4) no treatment (Bandura& Schunk, 1981). The children in the proximal goal condition progressed more rapidly in self-directed learning, achieved higher mastery of basic mathematical operations and developed greater perceived self-efficacy and intrinsic interest in mathematics than their peers in the other conditions.

In the sport and exercise setting, three of four studies revealed that the group involved in short-term plus long-term goals achieved the greatest performance

improvements (Bar-Eli et al., 1994; Hall & Byrne, 1988; Tenenbaum et al., 1991). Bar-Eli et al. (1994) established the benefit of the combination of proximal and distal goal-setting condition over distal only goal-setting condition with behaviorally disordered youth in a one-minute maximal sit-up task over a 10 week period. In another experiment, 54 college students spent three weeks in weight training and it was demonstrated that the short-term plus long-term goal-setting groups achieved the best results (Hall & Byrne, 1988). The final study with high school students in a 3-minute maximal sit-up task further supported the assumption that the short-term plus long-term goal group would outperform the other goal groups such as short-term or long-term only goal groups (Tenenbaum et al., 1991). Furthermore, results of Kyllo and Landers' (1995) meta-analysis of goal-setting literature indicated that the combination of proximal and distal goals enhanced performance significantly more than distal goals alone.

Self-Determination of Goals

When individuals play a significant role in selecting goals, they hold themselves responsible for progress towards them. Effects of assigned versus collaborative goal setting have been examined extensively in relation to job performance (Locke & Latham, 1990). A greater degree of satisfaction is expressed through participative goal-setting but performance is similar between assigned and participative goals

groups. It appears that once individuals get immersed in an activity, the goal itself becomes more salient than how it was set (Locke & Latham, 1990). Furthermore, it seems that participative decision-making is often illusory; in fact, a few influential individuals usually determine in large part what gets decided (Bandura, 1986).

Self-determination of goals has been examined in the sport and exercise domain to verify whether self-determination may prove more effective than externally designated standards. This hypothesis was tested with adults (Hall & Byrne, 1988) and with children (Wraith & Biddle, 1989). No significant differences in performance increment were found between the self-determined goal-setters and assigned goal-setters. However, Kyllo and Landers (1995) have concluded in their study on sporting endeavours, that goal-setting is more effective when subjects set or at least participate in setting goals and this position is also supported by Burton (1993).

Maintenance of Performance

Goal-setting has helped reduce the variance of performance in the psychological and business field (Locke & Latham, 1990). Constancy of skilled action has also been observed in athletic performance when goal-setting was used (Boyce, 1979; Erffmeyer, 1987). Boyce (1990) noted that the learning pattern of goal-setters was linear in nature as opposed to an erratic acquisition pattern exhibited by the non goal-setting group. Maintenance of peak performance has been examined in a two-year study of free throw accuracy with an intercollegiate women's basketball team

(Erffmeyer, 1987). These female players maintained their highest averages of free throw accuracy during the goal-setting phase. Goal-setting was being compared to other mental training methods such as progressive relaxation training and mental rehearsal.

Group Goals Versus Individual Goals

In industrial research, group goals have been consistently successful at enhancing performance on group tasks (Locke & Latham, 1990). The success of group goals would be of particular interest in sports as many sports are group-oriented. Although many professional teams do use goal-setting in their training (individual and group) there are no documented research papers indicating how goals can be effective with groups.

In the academic realm, Tuckman (1990) investigated the effects of group goals, individual goal-setting and do-your-best in a voluntary homework system project for college students. No performance differences were found overall. However, there was a strong interaction between performance condition and individual level of self-efficacy. Group goals were most effective with middle level of self-efficacy. High self-efficacy individuals did better in the do-your-best condition setting their own goals and low self-efficacy individuals fared better in an individual goal-setting condition. Since students with learning disabilities tend to have lower expectations for success than their peers (Licht & Kistner, 1986) assigned individual goal-setting should provide

positive results.

2.2.5 Goal-Setting in the Academic Realm

Efforts were made to find studies where goal-setting had been used with children having learning disabilities. As Schunk (1989) suggests, proximal goal-setting enhances motivation in young children by providing concrete standards against which they can appraise their progress. In the sport and exercise setting, no available research was found regarding LD and goal-setting.

Children with LD tend to have difficulties in the self-appraisal of progress. They require very specific guidelines in the form of feedback and of expectations to realize where they stand when learning reading, writing or mathematical skills (Bandura & Schunk, 1981; Kline et al., 1990; Sawyer, et al., 1992; Schunk & Swartz, 1991). Four studies concerned with goal-setting and learning situations with children having learning disabilities were located. Three experiments focussed on the influence of feedback and goal-setting with these children and one dealt with the use of proximal goal- setting.

A self-regulated strategy development program for **reading skills** proved to be more beneficial when it included goal-setting for generalization and maintenance (Sawyer et al., 1992). A second study conducted by Schunk and Swartz (1991) for **writing skills** demonstrated that the instruction of process goals accompanied with feedback provided significantly better results than the instruction of process goals only,

product goals or direct teaching. Another study on sentence writing, using feedback and a feedback-plus-acceptance routine, whereby students formulated their own goals as they progressed, provided better results than a direct teaching method (Kline et al., 1990). Students in the feedback routines achieved mastery within fewer trials than in the direct teaching method. Although no significant differences were found between feedback and feedback-plus-acceptance routine, the individuals in the feedback-plus-acceptance routine were much more satisfied and persisted in using this method after the end of the experiment. Finally, **proximal goal**-setting proved significantly helpful to children with mathematical difficulties (this sample of subjects was not identified as learning disabled but as children having gross deficits in mathematical skills) and it further increased their intrinsic motivation for such problems (Bandura & Schunk, 1981).

2.3 Summary

The goal-setting literature in the industrial domain has proven its effectiveness (Locke & Latham, 1990). When subjects set goals that are specific, moderately difficult, combined with short-term and long term objectives and accept their goals, they produce significantly higher performances than subjects in do-your-best groups. Until recently, results have been equivocal in the sport and exercise domain (Burton, 1993; Weinberg, 1994). However, the Kyllo and Landers (1995) meta-analysis of goal-setting studies has confirmed the effectiveness of goal-setting in improving sport

and exercise performance. In the academic realm, individualized proximal goal-setting and the use of feedback has helped children with learning problems (Bandura & Schunk, 1981, Kline et al., 1990; Sawyer, et al., 1992; Schunk & Swartz, 1991). Additionally, goal-setting has been shown to be effective with children in the physical activity context (Edwards, 1988; Erbaugh & Barnett, 1986; Weinberg et al., 1988). Therefore, the present study was warranted by the assumption that children with learning disabilities may also benefit from this psychological skill when learning a psychomotor task.

CHAPTER 3

METHODOLOGY

The purpose of this study was to investigate the effects of goal-setting on the improvement of a motor skill with children with LD and normally achieving elementary school children. This chapter outlines the methods in the following sections: 3.1 Subjects, 3.2 Assessment and Questionnaires, 3.3 Experimental Conditions, 3.4 Procedures, and , 3.5 Design of Study and Analysis of Data.

3.1 Subjects

In agreement with school authorities, an informed consent document was distributed to all students in order to obtain a base for selection of subjects (Appendix A {English Version}, Appendix A-1 {French Version}). Forty-four consent forms from the LD classes and 92 forms from NA pupils were returned. The 44 students in the LD classes were all retained. For the NA students, a random selection of 40 subjects occurred with the restrictions of matching them as much as possible according to age and gender with the LD groups.

Eleven pupils with LD and one NA student discontinued the study of their own volition. Therefore, 33 students with LD and 39 NA completed the entire experiment. The distribution of the students in the goal conditions is found in Table 1.

Table 1

Distribution of Students According to Goal Condition

	Goal Condition		
Subject	Goal-Setting	Do-Your-Best	Total
NA Children	17	22	39
Children with LD	15	18	33

3.2 Assessment and Questionnaires

3.2.1 Object Control Assessment

The Object Control Subsection of the Test of Gross Motor Development (TGMD)(Ulrich, 1985) was used to classify subjects as high or low in object control skills (See Appendix B). The test-retest reliability for Ulrich's test was established at .97, the inter-scorer reliability at .97 and the internal consistency coefficient was .78 (Ulrich, 1985). Validity for this test was established by three experts in the field.

The TGMD is designed to evaluate gross motor functioning of children 3 to 10 years of age, assessing the presence of mature components of motor proficiency.

It is not concerned with the quantitative outcomes of performance, that is, time, distance,or accuracy. This test measures qualitative criteria of 12 gross motor skills that are subdivided into two major subsections: locomotion and object control. The object control subsection measures a two-hand strike, stationary bouncing, catching, kicking and the overhand throw.

The children aged 11 to 13 years in the present study were also assessed by this test. Within the sample of 72 subjects, only two children scored 19 out of a perfect score of 20. The remainder obtained scores ranging from 7 to 18. The older children did not receive a perfect score, in fact they ranged from 7 to 19. Thus the TGMD provided satisfying discrimination between high and low subjects even with the older children.

This test was administered before the actual experiment. All children were videotaped and assessed by observation. When there was some uncertainty, a second observer was used to verify the skill level of the child via video. Subsequently, an intra-observation of 10 subjects was performed, reaching 85% agreement.

Determination of High or Low Skill Level

Subjects scoring 13 and less were classified as the low skill group. Subjects scoring 14 and over were classified as the high skill group. This division created a similar number of subjects in the high (33) and the low (39)groups. The distribution according to skill level can be observed in Table 2.

Table 2

Distribution of Students According to Skill Level

	Student Type	
Skill Level	NA	LD
High	20	13
Low	19	20
Total	39	33

3.2.2 Harter's Perceived Physical Self-Competence Scale

Harter's (1982) subtest on physical self-competence from the Perceived Self-Competence Scale was used to assess each subject's sense of competence in the physical domain (Appendix C [English Version], Appendix C-1 [French Version]). A sense of competence may be a predictor of future performance because the perception of how one expects to do on a task will influence commitment and effort required for achieving a goal (Burton, 1993; Locke & Latham, 1990). This subsection of the Perceived Self-Competence Test has received wide acceptance when dealing with children in the sport domain (Harter, 1982; Feltz, 1988; Papaionnaou, 1995;

Ulrich, 1987).

The question format of the Perceived Self-Competence Scale requires children to choose an extreme statement to avoid neutral responses: a concept is presented with two statements contrary to each other and the child decides whether he or she affiliates with one of these two concepts. There are six questions.

Administration of the test was done prior to the experiment and at the end. Normally achieving children completed this questionnaire individually in silence before the experiment and at the end of the last practice session. Each child with LD met with the evaluator individually and completed this test orally. Factorial validity (.41-.81) and reliability (.80-.86) for Harter's (1982) Perceived Self-Competence Scale has been established with several large samples of children (Harter, 1982).

3.2.3 Questionnaire Concerning Experiment

At the end of the experiment, two separate questionnaires were completed by all subjects. One was for the goal-setting group (Appendix D [English Version], D-1 [French Version] and the other for the do-your-best group, Appendix E [English Version], E-1 [French Version]. The main intention of the latter was to find out if do-your-best children were setting goals. Both questionnaires attempted to find out if there had been additional practice of throwing the basketball outside of this experiment. There were also a few questions pertaining to their perceptions of the experiment.

3.3 Experimental Conditions

3.3.1 The Task

The task was shooting basketballs into a regulation basketball hoop with a one-hand set shot behind a specific restraining line depending on the age of the subject. The shooting technique was taught to each group upon their first training session with a physical and verbal demonstration by the experimenter. The basketball set shot was taught using the following cues (Krause, 1984): (1) place feet spread shoulder width apart behind restraining line, (2) foot of throwing arm is forward and (3) knees are flexed, (4) ball hold: fingers are spread, wrist is locked and cocked, index is throwing finger, balance hand is on the side of the ball, (5) elbow is up and in front of body, (6) head up, (7) eyes look up above rim till ball is in, (8) thrust ball up and over, (9) look for backspin, (10) attempt a medium-high vertical shot over rim, try not to touch backboard.

At the first training session, subjects were brought together at the central basket for a demonstration of the first two cues, needed to succeed at the set shot. Then, they went to a basket and observed cue cards (Appendix F1, F2, F3, F4 and F5 and Appendix F11, F22, F33, F44 and F55 [French Version]), placed on the floor at the restraining line of each basket, which reminded them of the first two cues to focus upon. Correction by the experimenter, at the first session, was provided to ascertain that subjects understood the cue cards and the movement that was required. The next

two cues were re-demonstrated by the experimenter and the subjects went back to their baskets focussing on these cues and received further help or correction. This process continued until all 10 cues were reviewed.

The relevant learning cues were described in a sequential form, that is, starting with the initial position of the throwing arm and foot stance, going through the motion and completing with follow-through, on a series of five cards with illustrations posted at each basket. The subjects reviewed these cues by reading one card at a time and focussing on the two cues indicated on that card. They would then shoot 10 (LD groups) or 15 (NA groups) times at the basket concentrating on those cues. They would next move to an adjacent basket and read two additional cues, and throw according to those cues and repeat the procedure until they completed cues 9 and 10. After doing so, they were tested for 10 shots at the testing station and their score was recorded. This score is referred to as a practice trial score.

This shooting skill was also assessed qualitatively at the beginning of the experiment and at the end. The subjects were videotaped while throwing at a basket during baseline and on the retention trial. The qualitative assesment form is included in Appendix G..

Rote repetition, was used in this research because it has been shown to be beneficial (Magill, 1993). Variable practice has also been demonstrated to be highly effective because it negates the effects of boredom and provides cues for various play

situations (Magill, 1993). However, since the present task, a free throw, represented a static skill in basketball, it was not necessary to establish a training environment that introduced other stimuli during the actual experiment. Variety was introduced by switching baskets and focusing on different parts of the throwing technique at each basket. All children shot for 3 minutes at an assigned basket and then rotated to four other baskets in the gym.

Establishing Baseline Level

As mentioned, all subjects were tested for the object control subsection of the TGMD (Ulrich, 1985), which resulted in high or low skill groups. Following this assessment, a baseline score on shooting was established. Subsequently, ten practice trial scores and a final retention trial score were used for statistical analysis. In addition, some subjects were placed in a goal treatment condition while the others were told to do their best. These experimental conditions are now described.

Scoring at Each Trial

Each practice trial score comprised 10 shooting attempts at the basket from a restraining line. The distance depended on the age of the student. Five points were awarded for each successful basket, two points for touching the rim, one point for touching the backboard and, zero if none of these parts were touched by the ball. These points accounted for partial precision and constituted the dependent variable. These trials were not timed, therefore, subjects could take the necessary

time to recover the ball and assume the proper throwing stance.

It was important that subjects selected for this study demonstrate limited experience with the basketball task because goal-setting may not be as effective with individuals who are already operating near their potential (Locke, 1991). Therefore a baseline test was devised. The baseline score consisted of the mean of three trial tests of 10 shots each. Subjects retained for the study were required to score an average of at least 1 basket and a maximum of 6.

3.3.2 Trials

The entire experiment included 12 trial scores, one baseline, ten practice trials and a retention trial. As noted, baseline was recorded prior to the start of the experiment. Then, ten practice sessions took place over a period of three to four weeks. Each practice session included 50 shots (LD children) or 75 shots (normally achieving children) at the basket prior to 10 shots, the mean of which constituted the practice trial score. The retention trial occurred five to seven days after the last practice session.

3.3.3 Goal Conditions

The majority of children with LD were assigned to a goal condition through class groups because the practice sessions took place during physical education class time. Two classes were randomly designated as goal-setting, and two other classes as "do-your-best". There were also five children with LD who practised at

lunch time and were assigned to the goal-setting group to balance out the numbers in goal-setting and do-your-best groups. Normally achieving students participated either in the morning, prior to class time, at recess or lunch time,and were assigned randomly to goal-setting or do-your best groups. The schedules were arranged so that goal-setters were not practising at the same time as do-your-best students. The groups were separated to prevent do-your-best groups from setting goals, otherwise the effect of goal specificity may not have been obtained (Locke & Latham, 1985). This prevented the do-your-best group from knowing what standards of achievement were expected in this task. They may have set goals, but these goals would likely have been less specific.

It has been recommended that goals be made specific and moderately difficult (Burton, 1993; Kyllo & Landers, 1995). Moderately difficult goals are those attainable by 10% to 50% of individuals (Kyllo & Landers, 1995). If goals are not specific or not difficult enough, they may not lead to differences with the control group (Locke & Latham, 1985). Determining the degree of difficulty was not a trivial task.

According to baseline performance, students were assigned a short-term goal expressed as the number of baskets for every testing session and a long-term goal (Table 3). As the subjects got closer to the maximum or perfect score, performance goal increments were lowered or maintained in order to avoid

discouragement. Burton (1993) has suggested that goals may be lowered to adjust to the individual's present performance if necessary.

Table 3

Goal Increments for Setting Goals

Baseline Score	Short-term goal expressed in increase of number of baskets	Long-term goal
2-3	2 baskets until they reach 6, then by 1	8
4-5	2 baskets until they reach 7, then by 1	9
6	1 basket, maintain	10

3.4 Procedures

All groups received a baseline assessment, ten practice sessions of fifteen minutes each over a period of three to four weeks, and a retention trial, five to seven days following the last practise session trial. At the end of each practice session, each subject was assessed on a trial of ten shots at the basket to determine

a trial score for that session.

3.4.1 Practice Sessions

Within the 15 minutes allotted, for each practice session, due to gymnasium availability, children with LD threw 50 times at a basket for a total of 600 shots including the ten trial shots. Normally achieving children threw 75 times at each session plus ten additional shots for the trial score, for a total of 850 shots. These differences between the two groups were not intended in the initial design of the study, but reflect the fact that children with LD took much more time to recover the ball and return to throwing position. Unfortunately, since children with LD were trained and tested during class time, no more than 15 minutes per group could be allotted for each session.

Subjects shot for three minutes at an assigned basket and then rotated to four other baskets in the gym during practice sessions. Children with LD threw 10 times at a basket and normally achieving children threw 15 times (50 and 75 shots in total, respectively). As they practised, they focussed on a particular aspect of the free throw to improve accuracy by observing the series of five cue cards of the proper technique. At the end of each practice, a basket served as a testing station. Two or three subjects lined up, behind their respective restraining lines and threw alternately, until they reached a total of ten shots. The other subjects waited their turn in the locker room.

Individual testing would have been the preferred choice for this experiment. However, due to time constraints such as gymnasium availability, individual testing was not possible. Therefore, some competition between individuals in both goal conditions may have been present during this research. Competition was kept to a minimum by having only a few children practice together (six children, each practicing at one of six different baskets). Testing was done in even smaller groups and scoring knowledge was withheld to avoid comparison among subjects. Because of partial points for rim, backboard and basket, children were not always able to keep track of their score or the scores of their peers. Also, all participants were asked not to divulge their results to others for the length of the study.

The subjects in the goal-setting groups were reminded of their assigned goals on a daily basis. The power of goal-setting was explained at the start of the experiment and was repeated through practice sessions: "Goal setting is a way of making you work harder, knowing how well you are doing and becoming successful at reaching your goals."

3.4.2 Practice Scheduling

Practice groups were split into six groups of six subjects and one group of four subjects and met three times a week (Monday, Wednesday, and Friday) for three weeks and one day. The time scheduling was as follows: 7:45 - 8:05, class time for children with LD, 11:50 - 12:10, 12:15 - 12:35, 12:40 - 13:00 and 14:00 -

14:20.

3.4.3 Apparatus

The height of the basket and shooting distance were determined by a pilot project with 27 children, aged 9 to 11 years. Equipment used during this experiment was as follows:

a) Six shooting stations; height of basket: 259 cm (8.5 feet, standard height for elementary school),

b) Throwing distance for 9-10 year-olds: 290 cm (9.6 feet) and 11-13 year-olds: 305 cm (10 feet). (The distance measurement was taken from the backboard to the throwing line and was determined by the pilot study. The chosen distance provided sufficient challenge while not being too difficult for children of this age level.)

c) Six pilons to mark off throwing distance and tape on the floor,

d) Six basketballs of mini-basketball size 5.

3.5 Design and Analysis of Data

In this study, there were two groups of individuals, children with learning disabilities and normally achieving children. They were further subdivided into two levels of object control skill (high or low). There was an experimental group (goal-setting group) and a control group (do-your-best). The results of the NA children

and the children with LD were analyzed separately because the former had 75 shots per practice session while the latter had 50. Twelve trial scores were computed as the dependent variable that is, the baseline trial, the ten practice session test trials, and the retention trial. Thus, the design was a 2 X 2 X 12 (goal condition, object skill control level) ANOVA with repeated measures (12) on the last factor.

For comparison between the NA and LD groups, a 2 X 2 X 2 X 4 (treatment X skill level X student type) repeated measures ANOVA was performed using baseline trial, and three trials, at the 150, 300, and 450 shots of practice. The NA group had 150 shots after two practice sessions while the LD group required three practice sessions to reach 150. In this manner, tentative comparison between the two subject groups could be made. A one-way analysis of variance was performed on baseline free throw scores to determine if initial differences existed between goal-setting groups.

Learning effects were assessed through a pre- and post qualitative assessment of the basketball set shot.

CHAPTER 4

RESULTS

The purpose of this research was to assess the effectiveness of goal-setting with normally achieving (NA) children and children with learning disabilities (LD) as they practiced the basketball free throw. The subjects were divided into treatment conditions of goal-setting or do-your-best and, into high and low skill levels. This chapter is organized in the following sections: 4.1 Drop-outs, 4.2 Results for Children with LD, 4.3 Results for Normally Achieving Children, 4.4 Comparisons of Results between children with LD and NA children, 4.5 Learning Effects and Retention., 4.6 Qualitative Assessment of Basketball Free Throw, 4.7 Results Related to Perceived Physical Self-Competence, 4.8 Results of Use of Goals by Do-Your-Best Subjects, and 4.9 Summary of Results.

All children obtained a trial score for baseline, ten practice trial scores and a retention trial score. Initially, the results for children who were LD and NA children were assessed separately because the latter group had more practice shots per session than the children with LD. NA children had 75 shots at each practice session and the children with LD had only 50 shots. Subsequently, an analysis of variance was performed integrating both groups by using the scores obtained at baseline, and after the same amount of shooting practice, that is, at 150, 300 and 450 shots.

4.1 Drop-outs

Eleven pupils with LD and one NA student discontinued the study. Thirty-three students with LD and 39 NA students completed the entire experiment. In the NA group, only one subject withdrew. Within the eleven LD dropouts, seven subjects were high skilled and four were low skilled (See Table 4).

Table 4

Distribution of Drop-out Students With LD

Skill Level	Dropped out	Continued
High	7	13
Low	4	20

4.2 Results for Children with LD

A 2 X 2 X 12 (skill level X treatment condition X trials) ANOVA with repeated measures on the last factor was performed and is located in Table 5. Table 6 indicates the descriptive statistics for each trial test for the LD groups.

Table 5

ANOVA Table for Children With LD Across 12 Trials

Between Subjects					
Source	SS	DF	MS	F	P
Skill Level	1899.502	1	1899.502	13.735	0.001
Goal Cond.	1048.327	1	1048.327	7.580	0.010
Sk.*Goal C.	212.084	1	212.084	1.534	0.226
Error	4010.695	29	138.300		
Within Subjects					
Trials	1422.155	11	129.287	3.814	0.001
T.*Skill	296.186	11	26.926	0.794	0.646
T.*Goal C.	359.572	11	32.688	0.964	0.479
T.* Sk.* G.	506.544	11	46.049	1.359	0.191
Error	10812.323	319	33.894		

Table 6

Descriptive Statistics for Children With LD Across 12 Trials

Groups	Skill	Trials											n
		B	1	2	3	4	5	6	7	8	9	10	R	
GS	High	26.1	27.4	23.8	27.8	27.6	28.4	33.7	30.6	30.3	31.4	31.1	26.3	7
SD		4.6	3.6	4.2	5.2	2.9	4.4	8.9	4.7	5.4	7.4	5.2	2.6	
GS	Low	19.1	25.5	21.6	27.1	26.2	23.9	27.7	25.6	27.6	29.5	29.9	24.6	8
SD		3.6	6.6	9.8	6.0	5.0	7.7	4.1	4.4	8.8	5.0	7.3	5.5	
DYB	High	24.3	25.8	27.3	26.2	30.7	24.2	25.5	30.3	28.8	27.2	25.5	27.2	6
SD		5.4	8.4	6.4	3.8	9.2	5.3	2.9	7.8	3.0	6.0	8.3	4.7	
DYB	Low	18.2	18.2	18.6	19.2	16.7	19.7	26.5	22.4	22.0	20.7	25.0	22.6	12
SD		5.5	5.6	8.3	5.2	8.7	9.5	7.5	8.1	8.4	6.9	6.2	5.6	

B = Baseline R = Retention GS = Goal Setting DYB = Do-your-best SD = Standard Deviation

Three main effects were present: skill level $F(1,29)= 13.7$, $p<.001$, goals $F(1,29)= 7.6$, $p<.01$ and, trials $F(11,319)= 3.8$, $p<.001$. These findings are graphed in Figure 1 for skill and, in Figure 2 for treatment. In these figures, the letter "B" refers to the baseline level, trials 1 to 10 refer to practice sessions 1 through 10 and, trial "R" refers to the retention trial. Figure 1, depicting the main effect for skill level, shows that high-skill subjects consistently outperformed the low-skill subjects. However, on one trial, Trial 10, both groups reached approximately the same level ($M= 28.3$[High] and $M= 27.4$ [Low]).

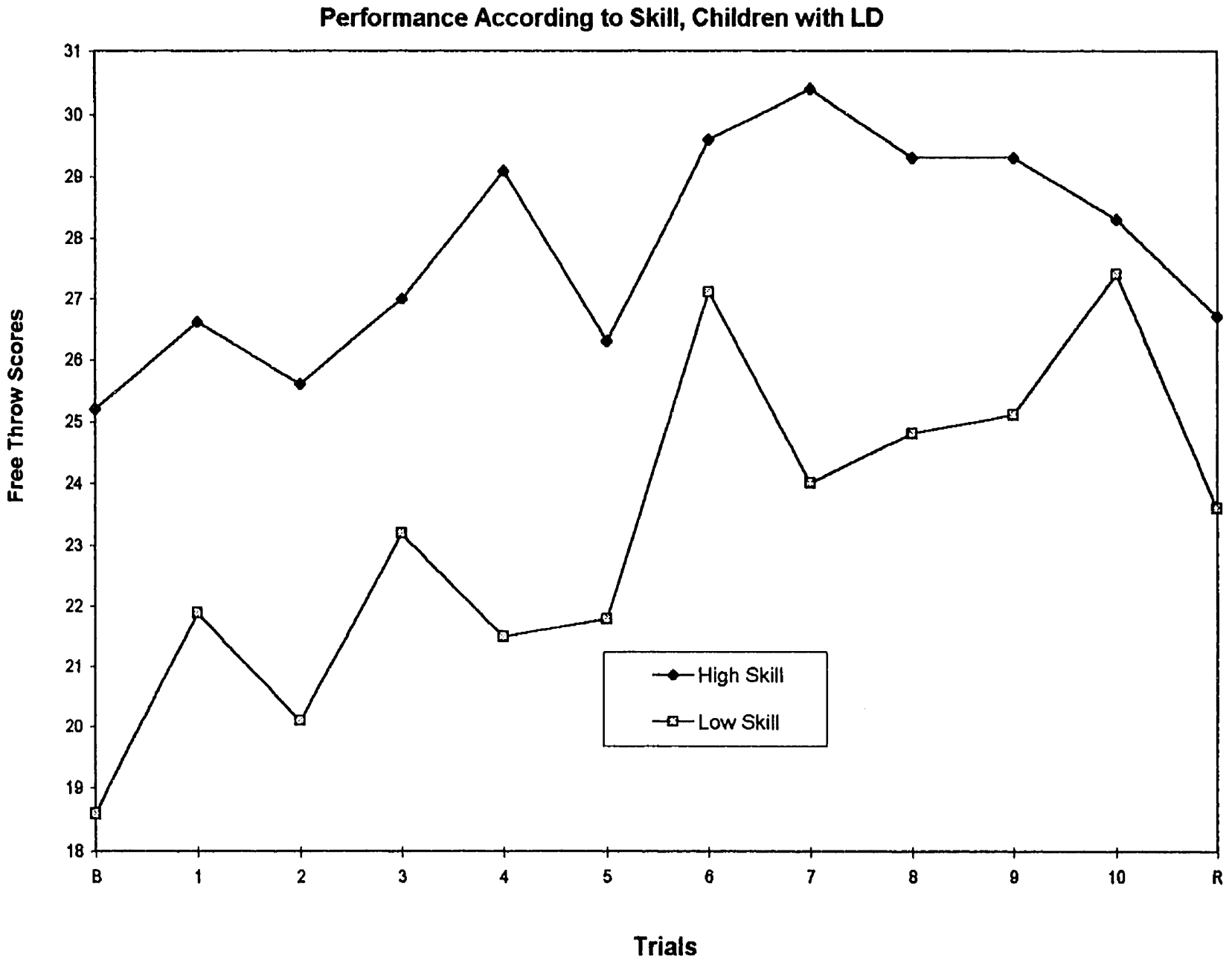
In Figure 2, it can be observed that children in the treatment group outperformed the do-your-best group except on trial 3, where both groups performed similarly (do-your-best, $M= 22.9$ and goal-setting, ($M= 22.7$). Retention was also very similar for both groups (do-your-best [$M= 24.9$] and goal-setting [$M= 25.4$]).

The trials main effect, $F (11,319) =3.8$, $p,<.001$, indicated that learning or improvement occurred overall (See Figure 3). On Trial 6, a major leap is observable which would be the midpoint in the experiment. At the retention trial, which was administered 5 days after the last practice, results lowered.

4.3 Results for Normally Achieving Children

A 2 X 2 X 12 (skill level X treatment condition X trials) ANOVA with repeated measures on the last factor was performed and is located in Table 7. The resulting descriptive statistics are presented in Table 8.

Figure 1


Performance According to Skill, Children with LD
Free Throw Scores
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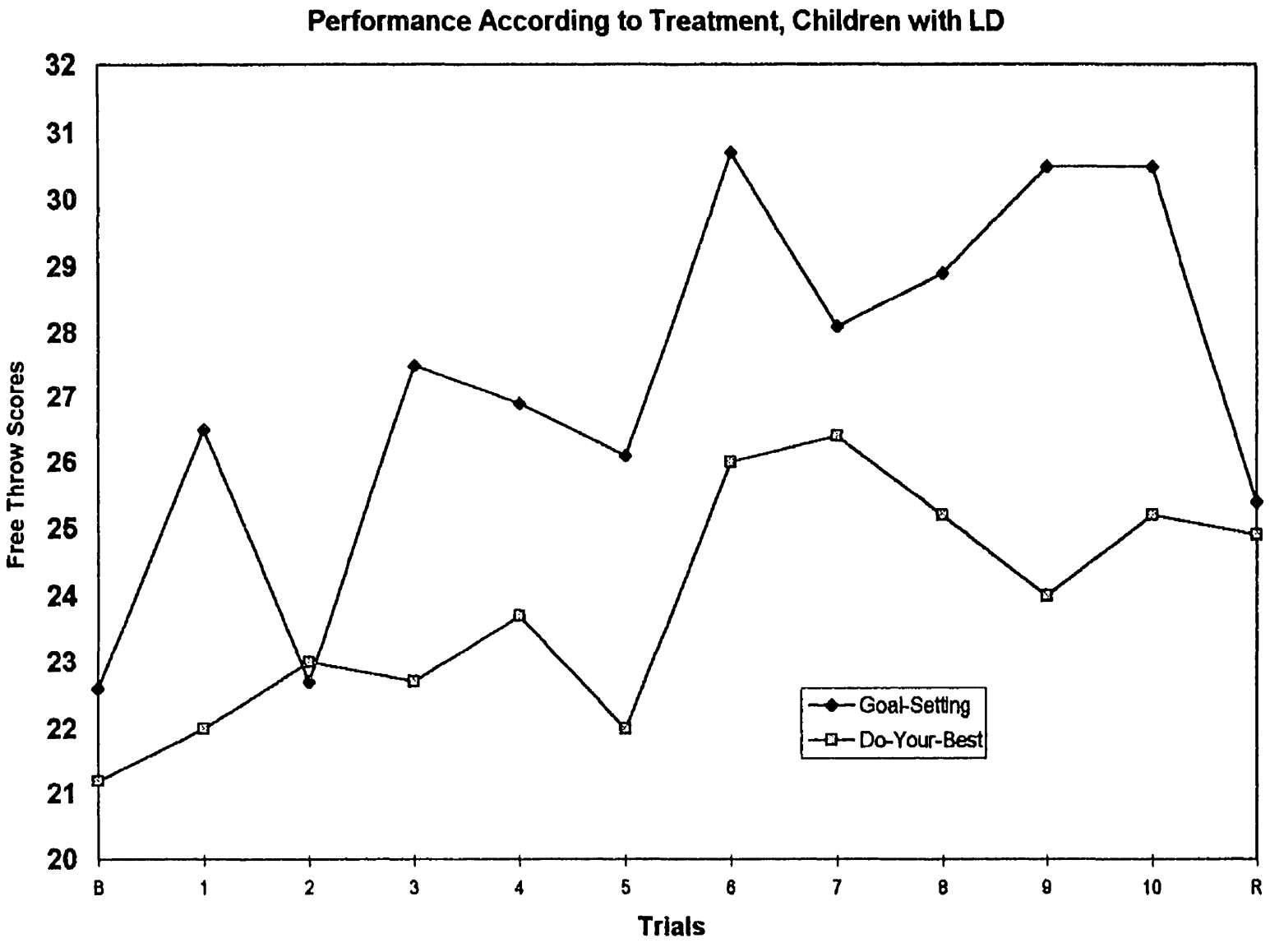
R
Trials
High Skill
Low Skill

Figure 2


Performance According to Treatment, Children with LD
Free Throw Scores
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Trials
Goal-Setting
Do-Your-Best

Figure 3

Performance According to Trials, Children with LD

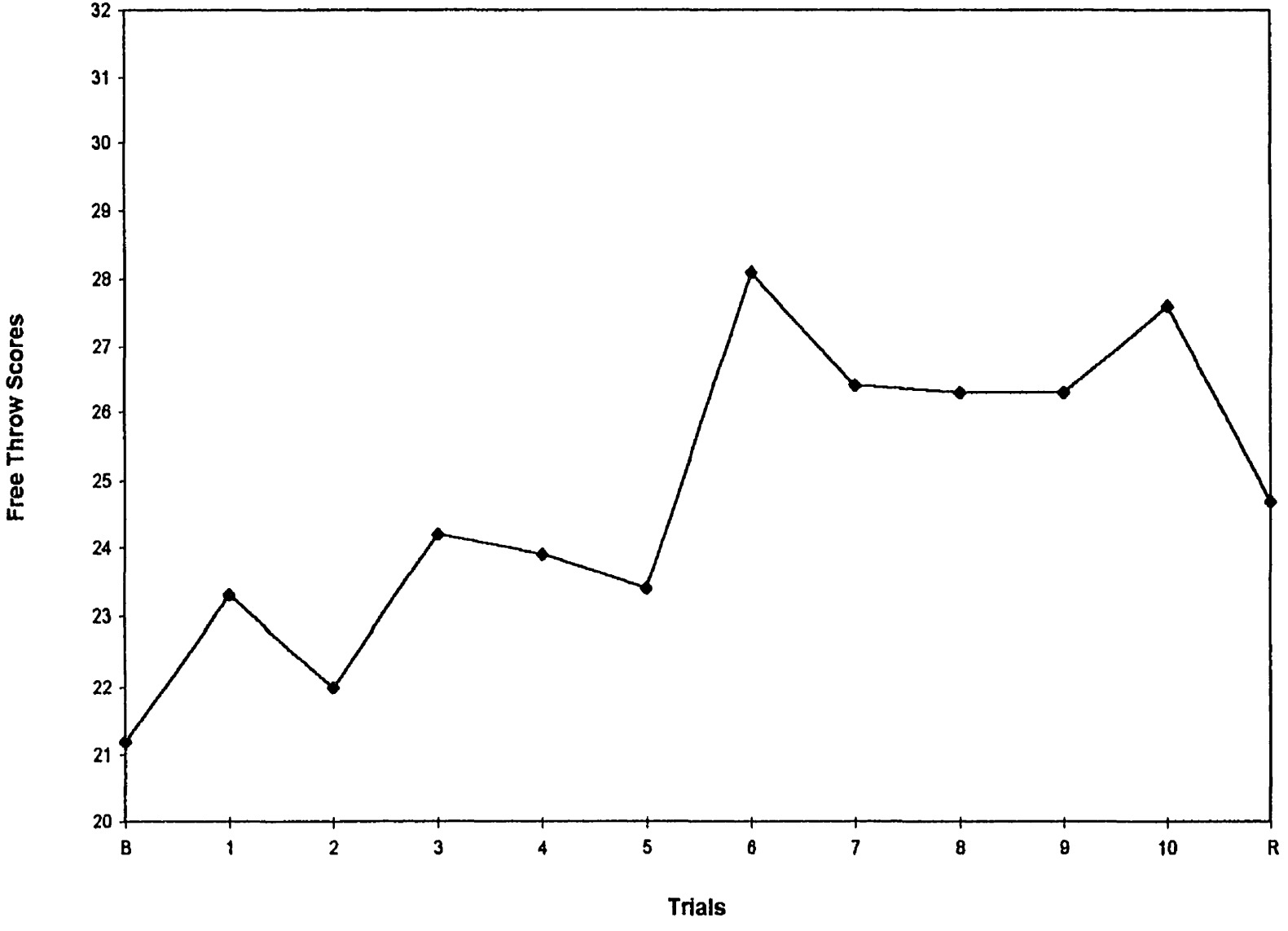


Table 7

ANOVA Table For Normally Achieving Children

Across 12 Trials

Source	SS	DF	MS	F	P
Between Subjects					
Skill Level	1456.118	1	1456.118	11.071	0.002
Goal Condition	68.499	1	68.499	0.521	0.475
Skill Level* Goal Cond.	12.983	1	12.983	0.099	0.755
Error	4603.426	35	131.526		
Within Subjects					
Trials	1052.356	11	95.669	3.164	0.001
T.*Skill L.	140.197	11	12.745	0.421	0.946
T.*Goal C.	285.944	11	25.995	0.860	0.580
T.* Sk.* G.	474.629	11	43.148	1.427	0.158
Error	11642.455	385	30.240		

Table 8

Descriptive Statistics for Normally Achieving Children Across 12 Trials

Groups	Skill	Trials											n
		B	1	2	3	4	5	6	7	8	9	10	Ret.	
GS	High	23.9	32.0	28.6	30.3	28.3	31.1	32.7	34.8	28.9	30.8	33.0	27.6	7
SD		5.6	3.9	5.9	5.0	7.0	4.5	4.3	4.8	3.8	4.8	7.5	10.1	
GS	Low	26.1	24.8	24.8	25.1	28.9	25.5	26.5	27.0	28.3	27.3	31.0	27.5	10
SD		3.9	7.4	9.5	6.7	7.5	8.1	5.1	5.3	7.9	5.6	6.2	7.8	
DYB	High	28.5	26.1	28.0	28.1	30.8	29.3	28.1	30.2	32.0	32.8	32.2	30.5	13
SD		2.9	3.4	5.3	6.1	5.1	6.7	4.2	7.1	5.7	6.8	7.5	6.6	
DYB	Low	23.3	23.9	25.2	24.9	25.0	25.7	24.4	27.3	26.7	29.1	28.1	25.7	9
SD		5.0	5.7	4.9	5.7	6.3	6.0	5.7	6.2	5.3	8.3	7.2	7.3	

GS = Goal Setting Ret. = Retention B = Baseline

DYB = Do-Your-Best SD = Standard Deviation

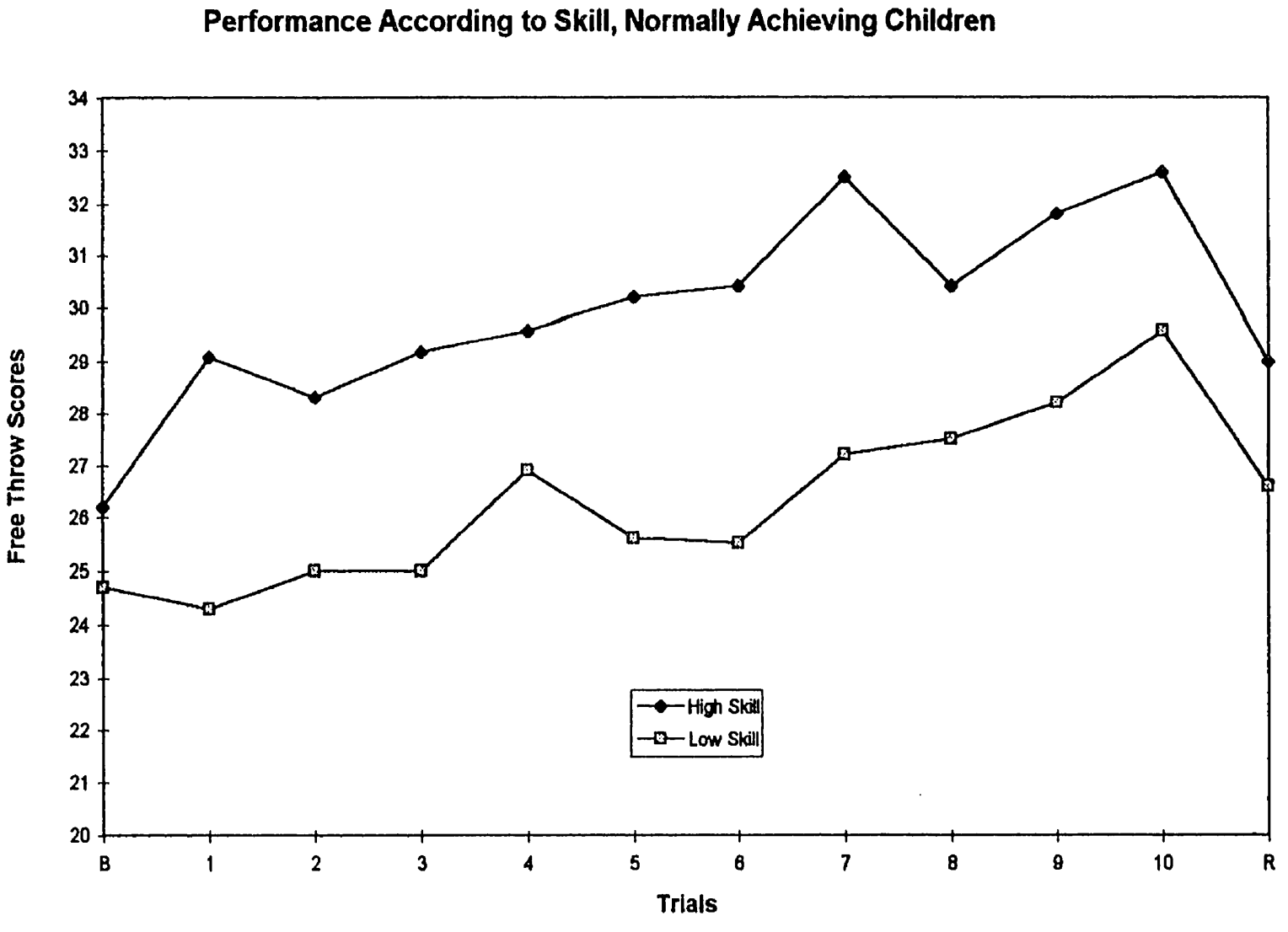
There were main effects for skill, $F(1,35)= 11.1$, $p<.01$ and trials, $F(11,385)=3.2$, $p<.001$. The high skill level children performed consistently with higher free throw scores. This effect is graphed in Figure 4. In Figure 5, the results for the trials main effect can be observed.

4.4 Comparison of Results between Children with LD and Normally Achieving Children

A 2 X 2 X 2 X 4 (student type X treatment X skill level X trials) analysis of variance (ANOVA) with repeated measures on the last factor was employed to analyze the performance data. Trials that were selected for this analysis were: 150, 300 and 450 practice shots. Descriptive statistics are presented in Table 9. The ANOVA table is presented in Table 10.

There were main effects for skill level, $F(1,64)= 17.9$, $p<.001$, goal condition, $F(1,64)= 9.4$, $p<.01$ and trials, $F(3,192)=9.57$, $p<.001$. Figure 6 (skill level) and Figure 7(goal condition) illustrate these main effects. In Figures 6 through 9, the letter "B" refers to baseline level, trial 1 to 150 shots of practice, trial 2 to 300 and trial 3 to 450. The high skill level groups outperformed the subjects from the low skill level groups. Furthermore, it can be observed that the high skill students always increased their scores whereas the low skill decreased on Trial 3. The goal-setting subjects in Figure 7, achieved higher scores than the do-your-best group and maintained their ascending trajectory whereas do-your-best declined on Trial 3.

Figure 4


Performance According to Skill, Normally Achieving Children
Free Throw Scores
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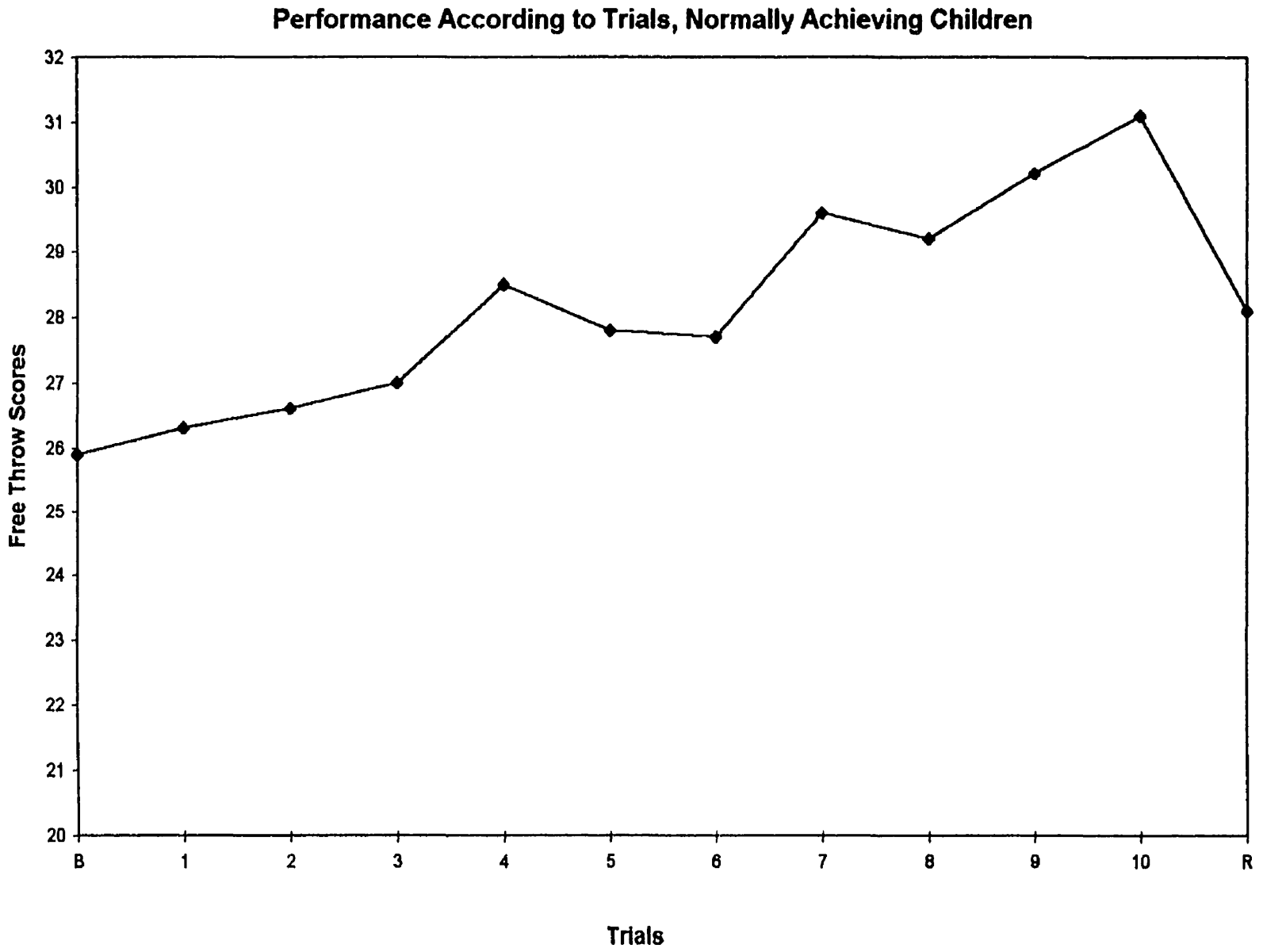
R
Trials
High Skill
Low Skill

Figure 5


Performance According to Trials, Normally Achieving Children
Free Throw Scores
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R
Trials

Table 9

Mean Scores for All Children Across 4 Trials

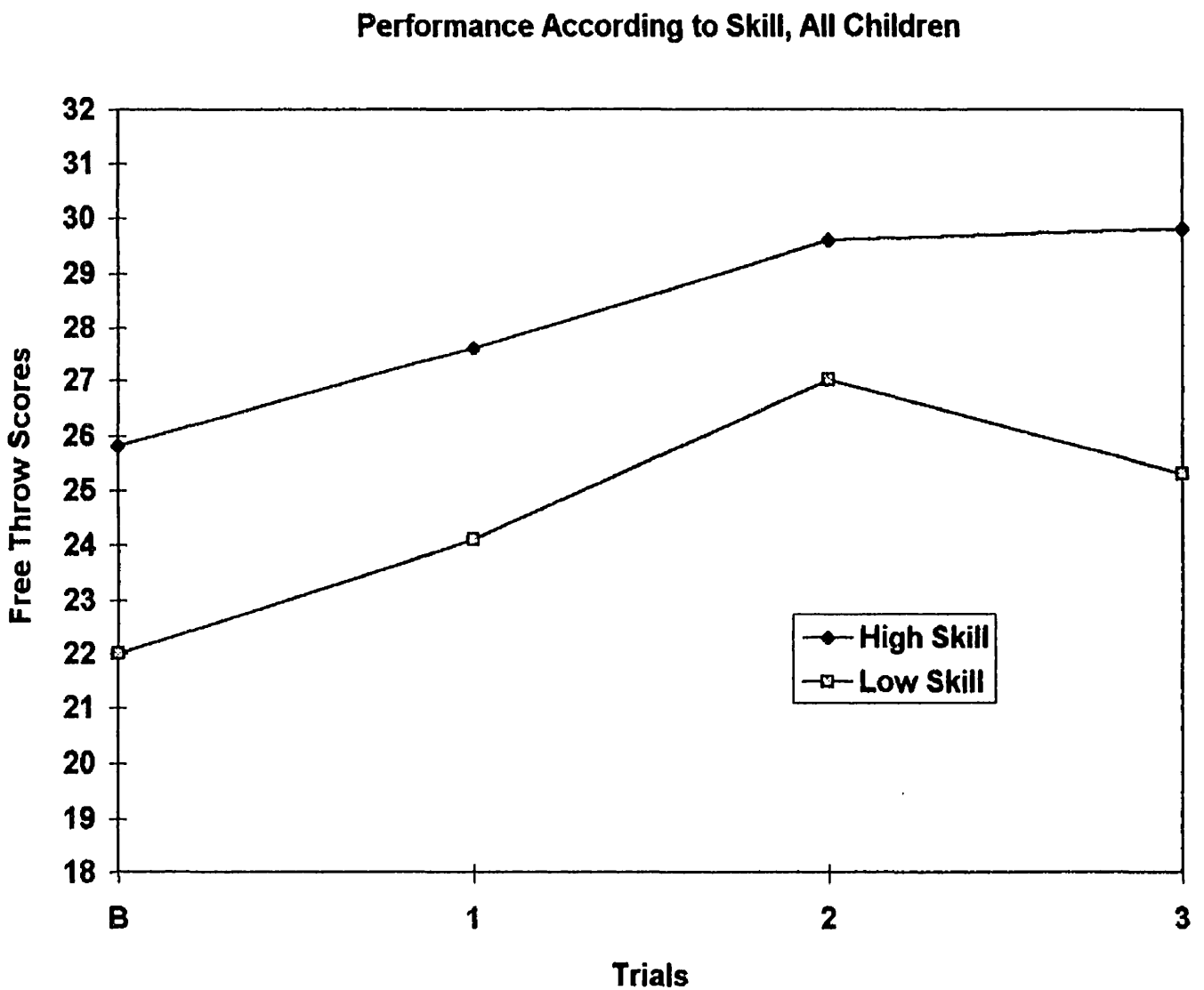
Skill	Goal	Student	n	Trials			
				Baseline	1	2	3
High	Goal S.	NA	7	24.0	28.6	28.3	32.7
SD				5.6	5.9	7.0	4.3
High	Goal S.	LD	7	26.1	27.9	33.7	31.4
SD				4.6	5.2	8.9	7.4
High	DYB	NA	13	28.9	28.0	30.8	28.1
SD				2.5	5.3	5.1	4.2
High	DYB	LD	6	24.3	26.2	25.5	27.2
SD				5.4	3.8	2.9	6.0
Low	Goal S.	NA	10	27.2	24.8	28.9	26.5
SD				4.2	9.5	7.5	5.1
Low	Goal S.	LD	8	19.1	27.1	7.7	29.5
SD				3.6	6.0	4.1	5.0
Low	DYB	NA	9	23.3	25.2	25.0	24.4
SD				5.0	4.9	6.3	5.7
Low	DYB	LD	12	18.6	19.2	26.5	20.7
SD				5.8	5.2	7.5	6.9

Table 10

ANOVA Table for Combined Groups Across 4 Trials

Source	SS	DF	MS	F	P
Between Subjects					
Skill Level	886.426	1	886.426	17.898	0.001
Goals	464.774	1	464.774	9.384	0.003
Student	157.050	1	157.050	3.171	0.080
Sk. X Goals	55.904	1	55.904	1.129	0.292
Sk. X Student	27.148	1	27.148	0.548	0.462
Gs. X Student	201.002	1	201.002	4.059	0.048
Sk. X Gs. X St.	20.478	1	20.478	0.413	0.523
Error	3169.648	64	49.526		
Within Subjects					
Trials	782.676	3	260.892	9.570	0.001
Tr. X Skill	34.867	3	11.622	0.426	0.734
Tr. X Goals	170.302	3	56.767	2.082	0.104
Tr. X Student	154.208	3	51.403	1.885	0.133
Tr.X Sk.X Gs.	43.584	3	14.528	0.533	0.660
Tr. X Sk.X St.	99.968	3	33.323	1.222	0.303
Tr. X Gs X St.	19.010	3	6.337	0.232	0.874
Tr. X Sk. X Gs. X Student	374.402	3	124.801	4.578	0.004
Error	5234.332	141	27.262		

Figure 6


Performance According to Skill, All Children
Free Throw Scores
32
31
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18
B
1
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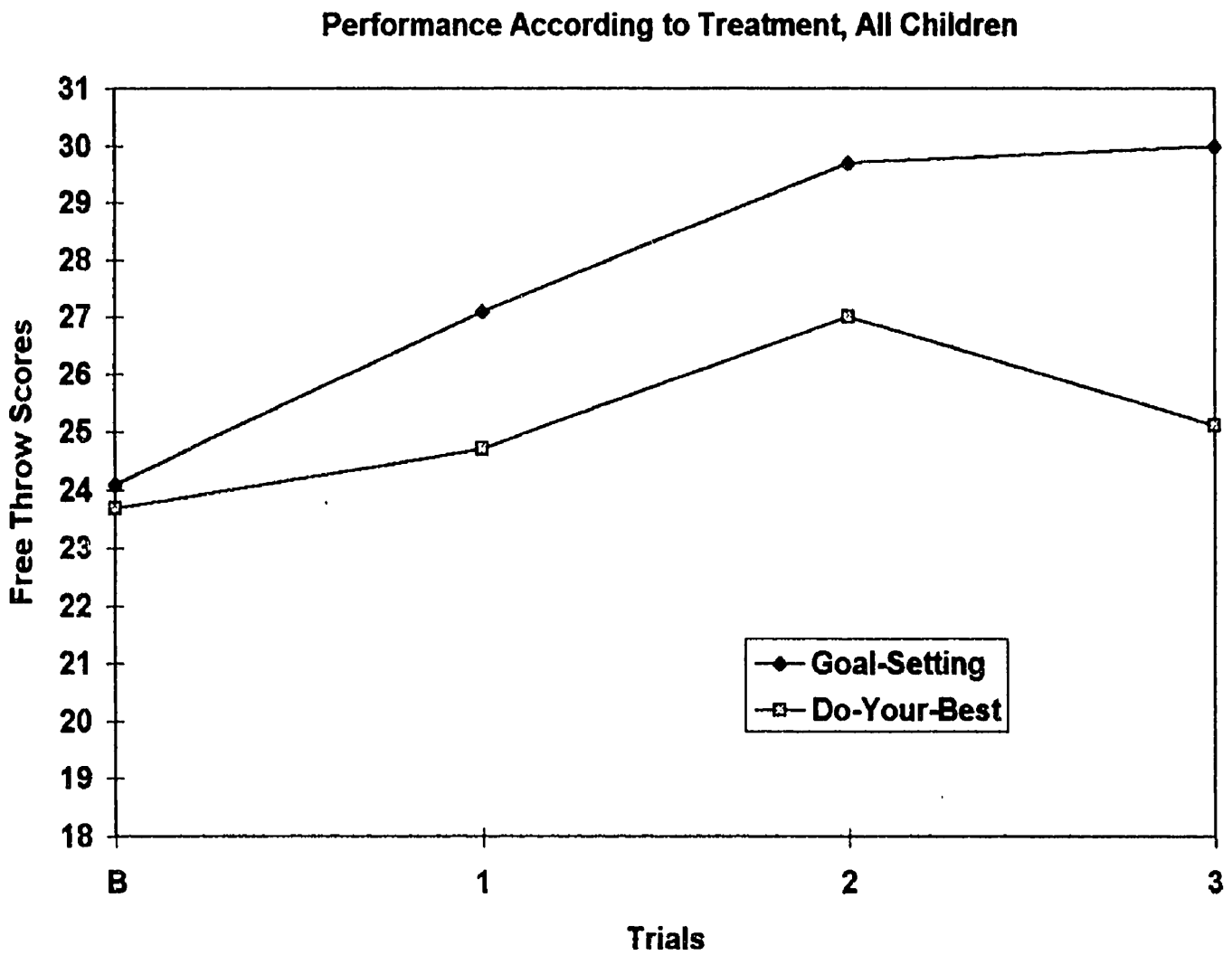
Trials
High Skill
Low Skill

Figure 7


Performance According to Treatment, All Children
Free Throw Scores
31
30
29
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22
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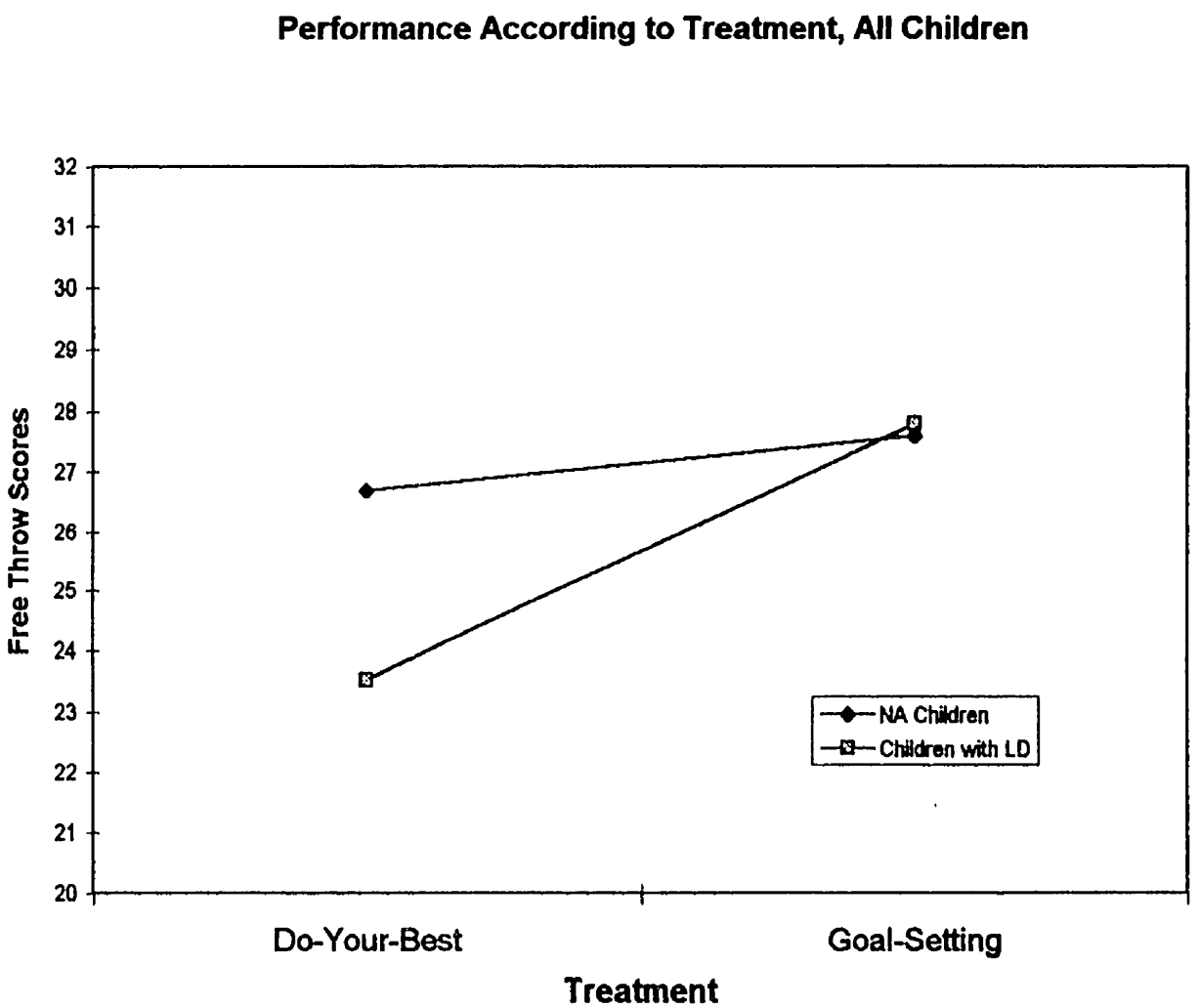
18
B
1
2
3
Trials
Goal-Setting
Do-Your-Best

A two-way interaction was present between goals and student type, $F(1,64) = 4.06$, $p<.05$, indicating that children with LD and NA children reacted differently to goal-setting. This interaction is graphically represented in Figure 8. The ANOVA Table (Table 10) also revealed a four-way interaction for student type, goal condition, skill level and trials. Implications of a four-way interaction are that one factor is not consistent with all combinations of the other three factors and, main effects and the two-way interaction cannot be interpreted unambiguously (Maxwell & Delaney, 1989). This interaction was analyzed graphically. Goal-setting groups (Figure 9) were observed separately from the do-your-best groups (Figure 10). In Figure 9, the scores of the NA-Low Skill-Goal-Setting group did not change markedly through goal-setting, an unexpected finding.

In Figure 10, which illustrates the Do-your-best groups, the group which behaved differently from the rest was the low-skill LD group. This group greatly improved on Trial 2 while the other groups performances fluctuated slightly. Theory suggests that subjects in do-your-best conditions usually do not elevate their levels of performance significantly. The remaining groups performed according to expected behavior.

Figure 8


Performance According to Treatment, All Children
Free Throw Scores
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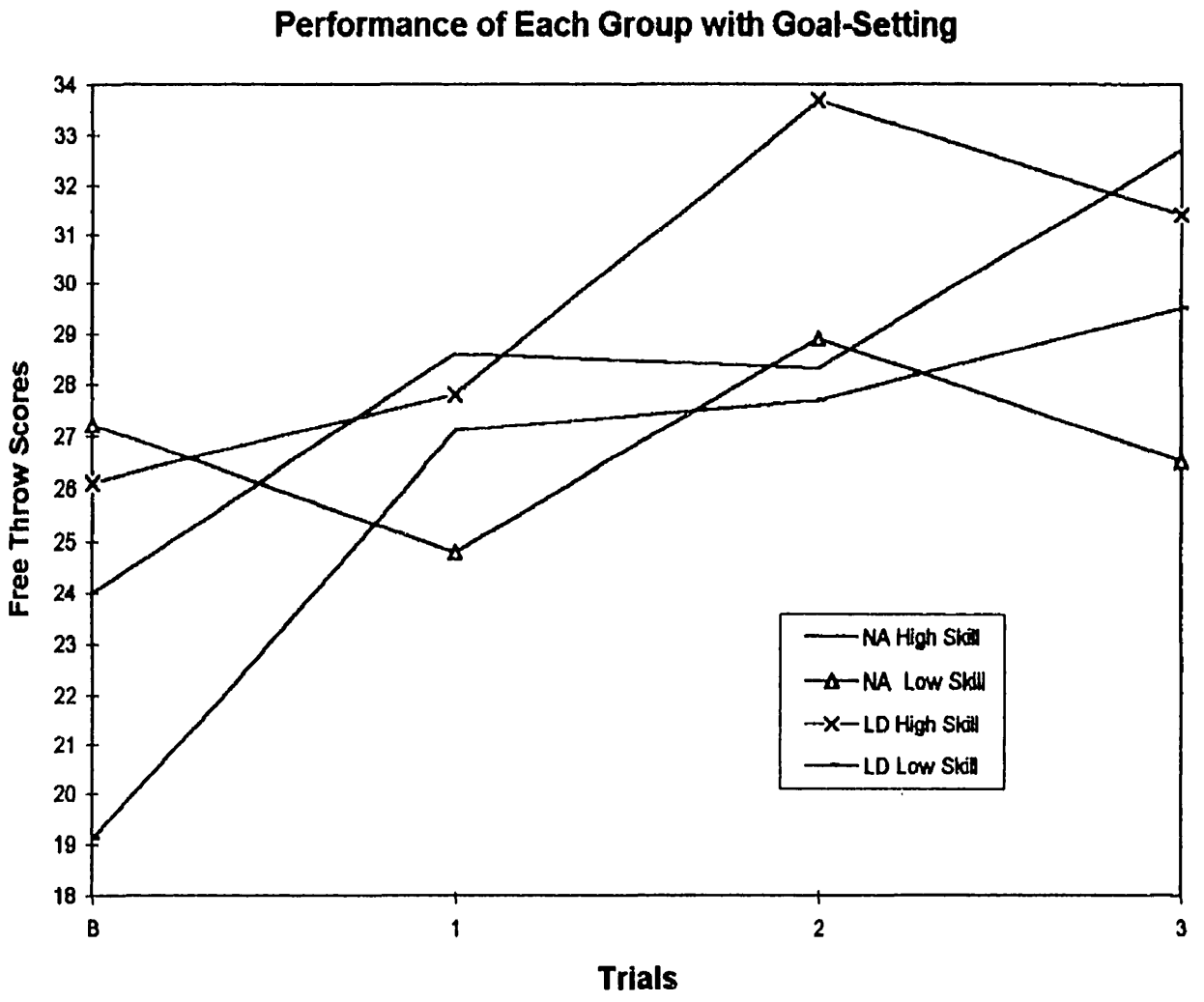
NA Children
Children with LD
Do-Your-Best
Goal-Setting
Treatment

Figure 9


Performance of Each Group with Goal-Setting
Free Throw Scores
34
33
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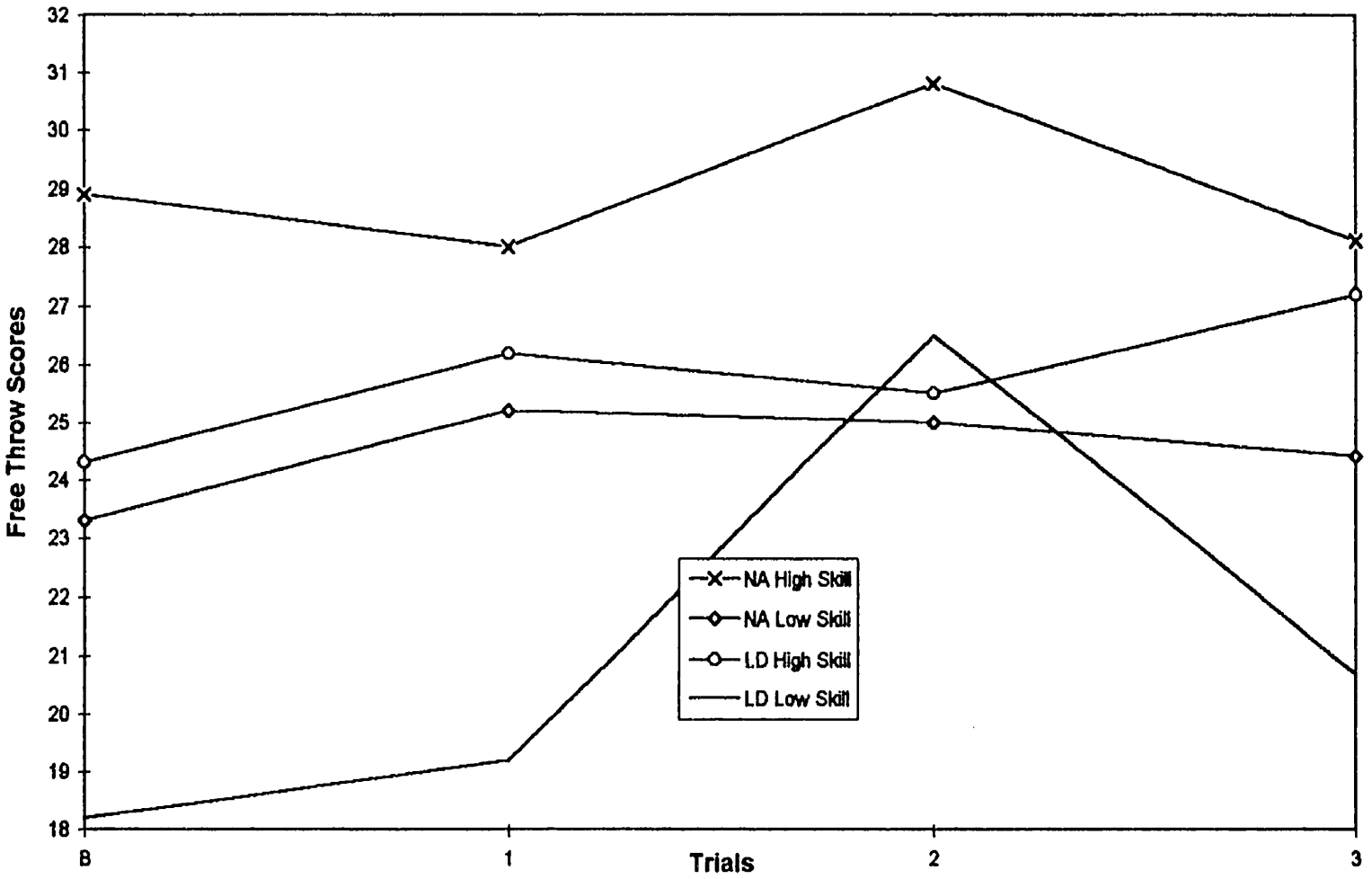
19
18
B
1
2
3
Trials
NA High Skill
NA Low Skill
LD High Skill
LD Low Skill

Figure 10

Performance of Each Group in the Do-Your-Best Condition



In the goal-setting groups, the baseline level for the low-skill NA goal-setting group was the highest, which would not seem representative of a low group (Figure 9). Skill was assessed by the TGMD and apparently did not account for possible specialization such as in shooting at baskets. In fact, these children were classified into the low skill category in a global profile but were better shooters than some of the high skill children.

The other group which performed unexpectedly was the low-skill LD do-your-best group (See Figure 10). They improved significantly on Trial 2 which was not the expected pattern of behaviour for this group. However, they also returned to their low level on Trial 3. The low skill NA goal-setting group and the low skill LD do-your best group may well be causing the four-way interaction which is always a difficult analytical situation for a scientific observer.

A trials effect was also present $F(3,192) = 9.57$, $p<.001$. Each trial was significantly different from one another. In Table 11, these differences can be observed.

Table 11

Mean Scores for Trials Across All Subjects

		Trials			
Mean Scores	n	Baseline	1	2	3
M	72	23.9	25.5	28.4	27.0
SD		5.8	6.5	6.7	6.5

4.5 Learning Effects and Retention

Figures 3 and 5 provided the retention scores for children with LD and NA children respectively. It was observed that this test trial was lower for both groups in comparison to test trials 8, 9 and 10. In depth analysis of these effects were not pursued because attention was focused on the combined analysis of both groups where a retention trial could not be included. General comments are presented in Chapter 5.

4.6 Qualitative Assessment of Basketball Free Throw

The basketball free throw was assessed qualitatively with each subject according to the 10 criteria listed in Chapter 3 at pre- and post-test. Subjects were given a score out of 10. Results indicated that there was a significant difference

between the pre and post-test, $F(1,64)= 318.6$, $p<.0001$. A main effect was observed for skill level, $F(1,64)=10.7$, $p<.01$, with the high skill children receiving higher scores than the low skill children. A main effect for student type was also observed, $F(1,64)= 8.09$, $p<.01$ which indicated that normally achieving children improved similarly to children with LD but maintained a higher score.

4.7 Results related to Perceived Physical-Self Competence

All children completed the Harter's Physical Perceived Self-Competence Scale (1984) prior to and after the tenth trial score. A Pearson's Product Moment Correlation failed to reveal a significant relationship between the perceived physical self-competence ($r = .064$) and the retention trial scores. The Perceived Physical Self-Competence Scale was used in place of a self-efficacy scale which had been shown to have a linear relationship to performance (Locke & Latham, 1990). An analysis of variance (2(Goals) X 2 (Skill) X 2 (Student Type) X Score on P.P.S.C. test) was conducted to determine whether there were any differences between groups in this perception. The only significant difference was that children in the goal-setting group demonstrated higher perceptions of physical competence than the Do-your-best group $F(1,64)= 4.75$, $p<.01$. In an additional analysis, perceptions of physical self-competence were similar at pre- and post-test, $(F\ 1,64)=0.348$, $p<.56$).

Table 12

Perceived Physical Self-Competence Scores, Means and Standard Deviations

Group	n	Mean	SD
High/GS/NA	7	18.6	1.7
High/GS/LD	7	18.4	2.3
Low/GS/NA	10	17.3	2.8
Low/GS/LD	8	19.4	2.3
High/DYB/NA	13	18.7	4.5
High/DYB/LD	6	17.5	2.1
Low/DYB/NA	9	15.3	2.8
Low/DYB/LD	12	16.2	3.0

High or Low: refer to skill level

GS: Goal-Setting DYB: Do-Your-Best

NA: Normally Achieving LD: Learning Disability

4.8 Results Concerning the Use of Goals by Do-your-best Subjects

A questionnaire was distributed to subjects in the do-your-best groups at the end of the experimental session. They were asked whether they had used goals

when being tested. Sixty percent of NA subjects and 82% of LD subjects revealed that they did use goals when being tested at the end of each practice session.

4.9 Summary of Results

Separate analyses of variance for the LD groups revealed main effects for skill, goal condition and trials. This indicated the effectiveness of goal-setting and the influence of skill level with children with LD. For the NA groups, there were main effects for skill level and trials only. This indicated that goal-setting did not have a significant effect with these children as a group.

We further tested all groups in a 2 X 2 X 2 X 4(student type, skill level, goal condition, trials) ANOVA with repeated measures on the last factor. In this instance, interactions emerged, indicating that certain groups responded differently to goal-setting and do-your-best conditions. The two-way interaction with goals and student type indicated that children with LD performed significantly better with goal-setting while normally achieving children did not differ significantly on the basis of goal-setting.

While analyzing the four-way interaction, with trials, goal condition, student type and skill level, two groups emerged with unpredicted behaviour: the NA-low skill-goal-setting group and the LD-low skill-do-your-best group. The NA-low

skill-goal-setting group did not improve with goals whereas the NA- high skill group did. Also, the LD-low skill-do-your-best group achieved significantly higher scores than the three other groups on Trial 2; however, they returned to their low level on Trial 3. The behaviour of these two groups within each of the goal conditions (goal- setting and do-your-best) may have caused this four-way interaction.

Performance changes over trials were observed by improvement over trials and the improvement from pre- to post- qualitative assessment of the basketball shooting technique.. No significant correlation was evident between performance and the perception of physical self-competence. These perceptions of physical self-competence remained similar prior to and after training. In the do-your-best groups, 71% of all children were setting goals.

CHAPTER 5

Discussion

The purpose of this research was to determine the effects of goal-setting with children with LD and normally achieving children in a free throw basketball task. This was achieved by teaching the children how to throw a basketball and by integrating the psychological skill of goal-setting. This chapter will be divided into six parts: 5.1 Analysis of Drop-outs , 5.2 Learn ing Effects and Retention, 5.3 Goal-Setting Effects, 5.4 The Influence of Skill Level, 5.5 Perceptions of Physical Self-Competence and, 5.6 Summary.

5.1 Analysis of Drop-outs

Eleven children with LD withdrew from this study compared to only one in the NA group. Children with LD practiced during physical education class time except for five older boys (12-13 years) who were assigned to lunchtime practice because their physical education teacher would not allow the experiment to take place during physical education time. Four of these boys dropped out of the experiment, preferring to play with their friends in the school yard. These four subjects had high baseline scores and were in the high skill group. Disruptive behavior was the cause of two withdrawals. Three other drop-outs with LD had high skill level and four others demonstrated low skill. Therefore, skill appears to be unrelated to withdrawal.

The drop-out rate may be more a consequence of the lack of persistence than a lack of skill. Shooting baskets for a fifteen minute period on a regular basis may be considered boring for some children and improvement may sometimes be slow. There was no social contact; the child was alone to witness success or failure and attempt to improve. One noticeable difference between children with LD and NA children is that they took more time to recover the ball. They also required more external motivation to complete their series of throws.

Only one student of the NA group dropped out. All NA children practiced outside of physical education class time and the student that did not complete the experiment was of high skill level. Thus, their appears to be a definite difference between the persistence of children with LD and NA children.

5.2 Learning Effects and Retention

When observing Figures 3 and 5 in Chapter 4, the retention trials provided lower scores for both the LD and NA groups compared to higher scores obtained on Trial 6 for LD and Trial 10 for NA children. Research has indicated that decreases in retention are often present after the passage of time in which there has been no practice (Singer, 1975). However, this is not always the case. Two selected studies maintained that the retention trial provided superior results for the goal-setters and that the retention trial score reflected the high level of improvement of the final practice trials (Boyce, 1990; Erbaugh & Barnett, 1986). However, these studies both

examined a novel task eliminating the possibility of prior experience at the task. In our case, the basketball free throw may not have been a completely new task for several subjects.

Four factors have been identified that may have caused scores to be lower at the retention test. First of all, there was no goal-setting taking place for this final test and, secondly, no practice shots were taken prior to the ten shot-test at the basket. Furthermore, the retention test occurred in early June (end of the school year) whereby children may be less interested in practicing indoors and anxious to get back in the school yard with their friends. And finally, the children may have become bored with this repetitious throwing.

5.3 Goal-Setting Effects

Seventy-two children participated in 10 sessions of basketball free throw shooting. Thirty-three children with LD and 39 normally achieving (NA) children were classified into high and low skill level and assigned to a goal-setting or do-your-best group. The premise of this study was that goal-setting would produce greater performance results than recommendations to do your best. It was based on studies indicating that low achievers (low self-efficacy individuals) performed best under goal-setting conditions in academic tasks (Bandura & Schunk ,1981; Kline et al., 1990; Sawyer et al., 1992; Schunk, 1995; Tuckman, 1990) and on studies in goal-setting and sports where positive results were obtained with children (Erbaugh &

Barnett, 1986; Weinberg, Bruya, Longino & Jackson, 1988), adolescents (Bar-Eli et al., 1994) and adults (Erffmeyer, 1987; Hall & Byrne, 1988; Hall et al., 1987; Tenenbaum et al., 1991). When analyzing results for children with LD and NA children separately, goal-setting was found to be effective only with children with LD. This was further supported by a two-way interaction between goal condition and student type when all results were combined (see Figure 8, Chapter 4). However, a four-way interaction revealed that in the goal-setting groups there was only one group that did not benefit from goal-setting, the NA low skill group (See Figure 9). The other three groups who received goal-setting instruction did benefit from this teaching technique. These results partially supported hypothesis 1 which stated that skill improvement for the goal-setting groups (LD and NA) should be significantly greater than for the control groups.

The NA low skill goal-setting group had an unusually high baseline score to be considered in the low skill group. They actually had the highest baseline in the goal-setting groups(M = 27.2, see Table 8), despite being classified as low because of their limited proficiency in a range of object control skills assessed by the TGMD. These children were already throwing well at a basket and did not improve their performance through this training. It has been demonstrated in prior studies that performance approximates a plateau as subjects reach the limits of their present ability, therefore nullifying the effects of goal-setting (Locke & Latham, 1990;Weinberg, 1993).

Furthermore, goal-setting requires perceived progress to be effective; if not, evidence of improvement will be lacking (Schunk, 1995).

With the NA low skill goal-setting group, the baseline testing probably revealed their present capacity for throwing at the basket according to their age, size and strength. Improving with practice would possibly have been more evident over a longer period where their physical growth and increased strength would facilitate their capacity to throw. Age may also have been a factor. In this group, by chance, there was an overwhelming majority of 4th graders (7 out of 10 subjects) while in the high NA goal-setting group, there was only one grade 4 pupil out of 7 subjects.

Another possible factor may have been motivation in the face of failure to reach assigned goals. Burton's (1993) model on goal orientations indicates that subjects with low self-esteem may experience anxiety in a goal-setting situation. Their failure to achieve a prescribed goal may have impaired their performance rather than enhanced it. If the NA low skill children were performing to the best of their ability at baseline and were failing to reach higher standards, they may have also rejected the assigned goals. When using goals, attainments that fall short of an attempted standard will increase self-dissatisfaction (Bandura, 1986). Another problem arising in goal-setting is lack of commitment (Burton, 1993). If the children ceased to adhere to their assigned goals, they were not working towards achieving them, therefore goal-setting would not have been helpful. If this was the case, this may explain why these

children did not improve their performances.

Children in the NA do-your-best groups performed similarly to the NA goal-setters. One of the reasons may be that the do-your-best group of children were setting goals (Locke & Latham, 1985). The final questionnaire administered at the end of the experiment revealed that 17 of 22 subjects, or 77% were setting goals. The use of knowledge of results, in this task, may have allowed NA children in the do-your-best groups to also set goals. Hence, if the do-your-best group was also setting goals then the effect of goals versus do-your-best could not be observed. Locke and Latham(1985) have recommended withholding knowledge of results to prevent the control groups from setting goals. Unfortunately, it was not possible for this task. However, the multiple level of scoring made it more difficult for the child to keep exact score (5 points to a basket, 2 points for a rim, 1 point for the backboard). Competition may have also been a factor since children were not tested individually, time restraints not allowing this procedure. Hence , peer comparison may have fostered competition, which is another form of goal-setting (Locke & Latham, 1985).

5.4 The Influence of Skill Level

In this study, goal-setting groups were expected to outperform do-your-best-groups (statement of hypothesis 1). However, goal-setting proved to be beneficial only with the LD group. Hypothesis 2 stated that goal-setting groups in the low motor skill level, regardless of student type, should yield the greatest

improvements. This hypothesis was rejected because low skill NA children did not respond to goal-setting while low skill children with LD did. In all three analyses, skill level differentiated all groups but it was simply that the high skill level subjects consistently outperformed the low skill individuals.

Hypothesis 2 was rejected because there was a two-way interaction between student type and goal-setting. Children with LD performed better with goal-setting although it was ineffective with NA children. Opportunity for improvement was much greater for children with LD since their baseline scores were markedly lower than those of the NA low skill group. The task for this group may have been more novel than with NA children indicating that the NA children may have had prior practice or experience at this task while the LD children lacked this experience.

Psychological factors may have also been at work. In the combined analysis, two groups demonstrated different behaviour from the rest. The 4-way interaction between trials, goal condition, student type and skill further confirmed that certain subgroups performed differently. Observing the results of goal-setting graphically (Figure 9), the NA low skill goal-setting group was the only one which remained in the same range of performance. The other three groups improved their performance. Commitment, perseverance and positive self-perceptions were probably more at cause than skill level (Burton, 1993).

In Hypothesis 3, it was stated that there should be no significant differences

across trials between LD and normally achieving children of similar motor skill level in similar goal-setting groups. This hypothesis was also rejected by the four-way interaction between goal, trials, student type and skill level. The low skill NA goal-setting group did not respond to goal-setting favorably indicating that this group was different from the other groups.

The baseline scores of the low skill children with LD indicated that these children as a group had lower skills than the low skill NA children. This study further supported the mounting literature indicating that children with LD, have lower levels of motor skills than the NA child population (Bruininks & Bruininks, 1977; Haubenstricker, 1982; Lazarus, 1990; Miyahara, 1994). However, an interesting feature of this study revealed that goal-setting helped children with LD produce performance levels similar to that of NA children, which indicates a great leap in performance for this low skill group. This is observable graphically in Figure 9 but was not demonstrated by a three-way interaction of trials, skill level and goal condition.

Normally achieving individuals, in the early learning stages, usually experience rapid performance increases whether they are setting goals or not (Schmidt, 1988). This may not always be the case with children with LD who have been characterized as "inactive learners", lacking perseverance, having difficulty integrating learning strategies and commitment to a task (Bender, 1987; Poplin, 1988). However, this study has demonstrated that the low skill and high skill children with LD can respond

positively to goal-setting and practice with improved and sustained performance.

5.5 Perceptions of Physical Self-Competence

Hypothesis 4 stated that there would be a relationship between the perceived physical self-competence score and performance on the basketball free throw. No correlation was found between these two factors. Essentially, perceived physical self-competence reflects how children view themselves generally in the physical domain. This was to be compared with the TGMD which provides a quotient of a child's general object control skill. However, the results of this questionnaire and the recorded skill level (high or low) were not always consistent. Some children in the very low skill level viewed themselves as highly competent in the physical domain.

A self-efficacy test targets a certain task and requires individuals to estimate how well they would succeed in that task. This test must be designed specifically for the task that is investigated. For example, a questionnaire pertaining to the anticipation of success in the basketball free throw could have been formulated; however, establishing validity and reliability for this test would not have been feasable in this experiment because of the small sample. Hence, the children'self- appraisal in one specific task may have been more accurate than the overall appraisal obtained through physical self-competence. Thus a correlation between self-eficacy and performance on the basketball free throw may have been significant.

The Perceived Physical Self-Competence Scale taps a general notion of self-

efficacy in the physical domain but it appears that certain children do not accurately appraise their physical potential. Self-efficacy has been well researched as having a linear relationship with performance (Bandura, 1986; Bandura & Schunk, 1981; Schunk, 1995). Perceived physical self-competence has been shown to be related to sport participation and attrition (Harter, 1982; Feltz, 1988; Klint & Weiss, 1987; Papaionaou, 1995; Ulrich, 1987) but data do not exist suggesting a direct link with measurable performance.

Furthermore, a strong desire to be competent in a particular activity may cause children to overestimate their ability (Stipek, 1984). This concept was supported by Causgrove Dunn and Watkinson's (1994) study of children with physical awkwardness. The older children with physical awkwardness did not necessarily have lower perceptions of physical competence despite the fact that they were not doing well in motor activities. When perusing the data of this study on goal-setting, within our sample of 72 children, 21 children assessed themselves highly, scoring 16 and above, on both pre- and post-tests of the perceived physical self-competence scale while their scores on the TGMD placed them into the low skill level. This represents 29% of this group of children.

The Perceived Physical Self-Competence Scale was administered prior to the start of the experiment. An analysis of variance revealed that children in the goal-setting groups had higher perceptions of physical self-competence than the do-your-

best groups. However, this random difference did not appear to influence the results of goal-setting. A pre- and post test of Perceived Physical Self-Competence indicated that children rated themselves similarly, before and after the training sessions.

5.6 Summary

The main finding of this study was that practice and the use of goal-setting enhanced the performance of free throwing for children with LD. The present data did not suggest that goal-setting was effective with NA children because the NA low skill group did not respond positively to it. However, it is conceivable that with a larger sample of subjects, and if knowledge of results and competition were eliminated from the experimental design, a positive influence of goal-setting could be observed with this group of children.

Perceived physical self-competence did not prove to be correlated with performance on this task. This concept may not replace self-efficacy which is usually associated directly to the task at hand.

CHAPTER 6

SUMMARY AND CONCLUSIONS

The purpose of this research was to examine the effects of goal-setting when learning the basketball free throw with normally achieving children and children with LD. The effect of setting goals, skill level and student type were also studied. In addition, the Perceived Physical Self-Competence Scale was assessed in view of establishing a relationship between actual performance and perceived physical self-competence. This chapter will be divided into five sections: 6.1 Summary of the Methodology, 6.2 Summary of the Findings, 6.3 Conclusions, 6.4 Implications/Applications of this Research, and, 6.5 Recommendations for Further Studies.

6.1 Summary of the Methodology

NA children and children with LD participated in an experiment for which they were tested in four areas. A fifth area of testing was administered to do-your-best subjects only. First, they were assessed for their free throwing ability by three separate tests of ten shots at a basket. Basket height was 8.5 feet for all children and distances were 9.6 feet for 9-10 year-olds, and 10 feet for 11-13 year olds. Secondly, they were tested for their object control skill level with Ulrich's Test of Gross Motor Development (TGMD) (1985). The Object Control Subsection of the TGMD

measured a two-hand strike (softball hitting), stationary bouncing of a ball, catching (ball), kicking (soccer kick) and the overhand throw with a tennis ball. This test provided an overall assessment of the child's skill level for object control. The results of this test served to categorize children into high or low skill level. Thirdly, the Perceived Physical Self-Competence Scale, a subscale from Harter's (1982) Test of Perceived Self-Competence was administered. This was done to determine whether there was a relationship between perceived physical self-competence and performance. Fourthly, a pre- and post- qualitative assessment of the basketball free throw appraised performance improvement. Finally, an informative questionnaire at the end of the experiment was administered to the do-your-best group to find out whether they had set any goals during testing periods.

The children were randomly assigned to a goal-setting or do-your-best condition before any of the initial testing. Within the normally achieving population, 17 children were assigned to goal-setting and 22 to do-your-best. Amongst the children with LD, 15 were assigned to goal-setting and 18 to do-your-best condition. This assignment for the normally achieving group was done according to gender and age ratios encountered in the LD groups. The LD groups were contained groups, because practice and testing was done during physical education classes and these subjects were the basis of this study. Children of the same goal condition were grouped together for practice in order to avoid comparisons between groups . For

this experiment, the children practised free throwing for 10 training sessions stretching over a period of five weeks. At the end of the five weeks, the Perceived Physical Self-Competence Scale (PPSCS) was re-administered to all children. The PPSCS was administered in groups, with normally achieving children, and individually with children with LD.

At the first training session, the children were instructed, with demonstration, on how to throw a basketball into the basket. They had five self-instructive cards which indicated two different cues to focus on, starting with the beginning of the throwing position and ending with the follow-through position. Each child had their own basket and practiced three minutes for every cue, for a total of 15 minutes of practice. Normally achieving children threw 75 times and children with LD threw 50 times during each 15 minute session. These differences were present because children with LD took much more time to recover the ball and could not meet the 75 shot standard in 15 minutes. Furthermore, time constraints did not allow for more than 15 minute practices at each session. At the end of each practice session, each child was administered a test of 10 shots at the basket which constituted the main dependent variable. Scoring at the basket was as follows: a basket was worth five points, the rim, two points, and touching the backboard, one point. The goal-setting children were assigned verbally and on a printed log sheet to focus on a set number of baskets to be achieved during the test, according to their baseline level, and,

subsequently, to their achievement level as the training was pursued. The do-your-best children were only required to do their best.

6.2 Summary of Findings

Goal-setting improved the performance of the children with LD with greater effectiveness than NA children. However, statistical analysis revealed that it was only the low skill NA children that did not respond well to goal-setting while the high skill children of this group did improve their performance via goal-setting.

The student type factor was distinguished as influential in improving performance with the use of goal-setting. Goal-setting allowed the performances of the low skill LD group to rise to levels similar to that of the high skill groups. These results warrant further use and testing of goal-setting with these children because of the beneficial effects that might be expected. In the do-your-best groups, an overwhelming majority were setting goals, 60% in the NA group and 82% in the LD group. When the control groups are setting goals, this may nullify goal-setting effects (Locke & Latham, 1985). For the LD group, it did not make any difference, but for the NA group it may have. Perceived physical self-competence did not prove to be correlated with performance on this task. The Perceived Physical Self-Competence Scale may not be specifically related to performance on the task used in this experiment. If children had been asked to assess themselves according the basketball

free throw, a relationship may have been observed.

6.3 Conclusions

According to the findings of this study, and within the limitations of the design, the following conclusions are warranted:

1. Goal-setting with children with LD on a motor task is an effective teaching strategy and it would be expected that normally achieving children could also benefit from this self-regulative strategy.

2. Goal-setting appeared to be especially effective with the low skill LD group indicating that this group is particularly sensitive to this motivational strategy.

3. Low skill-NA children in the goal-setting group did not improve with goal-setting in this study. Unusually, high baseline levels of performance may have been at cause for this group.

4. Perceived physical self-competence was not related with actual performance. This scale may not be specific enough for the child to be able to produce an exact fit between appraisal and actual performance on a specific task.

6.4 Implications/Applications of the Research

Goal-setting proved to be effective for children with LD for this physical task. Goal-setting can be considered as an effective tool for teaching motor tasks because it motivates the child to increase attention and effort to the task and use feedback more effectively.

Even with NA children, it would be expected that goal-setting would enhance performance in a similar fashion, as long as the goals are accessible and challenging enough to require increased effort.

Skill level did not appear to be a significant factor related to goal-setting. High and low-skill LD children improved their performances with goal-setting. NA high-skill goal-setting children appeared to improve their performances also when compared to NA low-skill children who did not improve significantly from baseline levels.

In this research, Perceived Physical Self-Competence was not directly related to performance. This would indicate that PPSC is probably not an appropriate substitute for self-efficacy. Statements of self-efficacy should be specific to the task being investigated.

6.5 Recommendations for Further Studies

1. A novel task would be more desirable in order to obtain subjects who are at the same level of ability regarding the task. However, how to set goals and goal difficulty would have to be resolved through a pilot study.

2. Skill level continues to be a pertinent aspect of learning in motor skills. It should be assessed in further studies and is a factor that may effect the results. Preferably, differences between high and low skill groups should be significant and average subjects should be left out of the study. In this way, a true representation of high and low skill populations would emerge.

3. Perceptions of self-efficacy for a task should be assessed by the researcher according to the specific requirements of the task, in a manner similar to Bandura and Schunk (1981).

4. A task that does not allow the do-your-best group to have knowledge of results, would facilitate the emergence of the effects of goal-setting.

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APPENDIX A

INFORMED CONSENT FORM

Your youngster has been asked to participate in an experiment which is designed to identify the benefits of goal-setting in learning the basketball free throw. A total of 80 children will be randomly selected for participation in this experiment from those who return the signed consent form attached.

This study is being conducted by Mrs. Nicole Savoie who is presently on leave of absence from teaching at this school. This experiment will provide useful data to complete the requirements for obtaining a Master's Degree in Physical Education at McGill University, under the supervision of Dr. Greg Reid. This study is done in collaboration with St-Jean-Baptiste School.

Each youngster will practice free throwing three times a week for 3 weeks, 20 minutes each session in the school gym outside of class time and for certain groups, during physical education classes. The students will be assigned to one of 7 grouping periods: 7:45-8:15, 10:15 - 10:40, 11:45 - 12:10, 12:10 - 12:35, 12:35 - 13:00, 15:10 - 15:35 and 15:35 - 16:00. Arrangements will be made to bring children home or to school if they are assigned to morning or after-school groups. A schedule of practice time will be handed to each participant. In addition, the children will be asked to complete three short questionnaires: one on self-perception and the two others on goal conditions.

Your youngster may discontinue participation at any time during the study by simply asking to do so. Results of this testing will remain confidential and your child's name will not be used in any method or reporting. This consent form and the study have been approved by the Principal, Mrs. Yvette Campeau.

By signing below, you are indicating consent for your youngster to participate in the study, that you have read and understood this informed consent and that your questions concerning the study have been answered. Please feel free to call me at 455-7727 if you need further information.

Nicole Savoie

Youngster's name: _____ Gender: M - F

Parent Signature: _____ Date: _____

Teacher's name: _____

Telephone: _____

APPENDIX A-1

INFORMED CONSENT FORM (FRENCH VERSION)

Demande d'autorisation

Votre jeune est invité à prendre part à une expérience sur les lancers au panier. Cette étude servira à identifier l'utilité de la formulation d'objectifs en apprentissage moteur. Tous les élèves qui retourneront la présente formule signée feront l'objet d'une pige au hasard. De cette pige, nous conserverons 80 élèves qui participeront dans cette étude.

Cette recherche est effectuée par Madame Nicole Savoie qui enseigne l'éducation physique aux élèves de 4e année et du secteur de l'E.H.D.A.A. Présentement en congé pour études, Madame Savoie utilisera les données de cette expérimentation pour sa thèse de maîtrise en éducation physique, sous la direction du Dr. Greg Reid, chef de département de l'éducation physique, Université McGill. Cette étude a reçu l'appui de Madame Yvette Campeau, directrice de l'école Saint-Jean-Baptiste.

Chaque jeune pratiquera 3 fois par semaine (pour une période de 20 minutes) des lancers au panier, pendant 3 semaines et 1 journée (10 fois), sous la surveillance de Madame Savoie. Ces pratiques se feront au gymnase de l'école, en dehors des temps de classe pendant l'une des quatre périodes suivantes: 7:45-8:15, 11:45-12:15, 12:15-12:45 et 15:15-15:40.

Le transport des élèves groupés dans la première ou dernière période sera assuré par Madame Savoie, au besoin.

Votre jeune sera libre de participer à l'expérience. Si le jeune désire arrêter, il-elle n'aura qu'à en faire la demande. Les résutlats de cette recherche demeureront confidentiels et le nom des élèves n'apparaîtra sur aucun rapport ou méthode.

En signant, ci-dessous, vous autorisez votre jeune à participer à cette étude, selon les conditions expliquées ci-haut. Pour tout renseignement additionnel n'hésitez pas à communiquer avec moi au 455-7727.

Nicole Savoie

Nom de l'élève: _____ Age: _____

Genre: F ou M

Nom du titulaire: Classe de _____

Signature du responsable: _____

Date: _____ Téléphone: _____

APPENDIX B

PERCEIVED PHYSICAL SELF-COMPETENCE SCALE

Name: _____ **Age:** _____ **Birthday:** _____

Boy or Girl (Circle which)

	Really true for me	Sort or true for me				Sort of true for me	Really true for me
1	____	____	**Some kids do very well at all kinds of sports.**	**BUT**	**Other kids don't feel that they are very good when it comes to sport.**	____	____
2	____	____	**Some kids wish they could be a lot better at sports.**	**BUT**	**Other kids feel they are good enough at sports.**	____	____
3	____	____	**Some kids think they could do well at just about any new sports activity they haven't tried before.**	**BUT**	**Other kids are afraid they might not do well at sports they haven't ever tried.**	____	____
4	____	____	**Some kids feel that they are better than others their age at sports.**	**BUT**	**Other kids don't feel they can play as well.**	____	____
5	____	____	**In games and sports some kids usually watch instead of play.**	**BUT**	**Other kids usually play rather than just watch.**	____	____
6	____	____	**In games and sports some kids usually watch instead of play.**	**BUT**	**Other kids are good at new games right away.**	____	____

APPENDIX B-1

PERCEIVED PHYSICAL SELF-COMPETENCE SCALE(French Version)

Perception d'auto-compétence physique

Nom: _____ **Age:** _____ **Fête:** _____

Garçon ou fille (souligne)

	Très vrai pour moi	Un peu vrai pour moi				Un peu vrai pour moi	Très vrai pour moi
1	____	____	Certains jeunes sont bons dans bien des sports	MAIS	d'autres jeunes ne se pensent pas très bons dans les sports	____	____
2	____	____	Certains jeunes souhaiteraient être meilleurs en sport.	MAIS	D'autres jeunes trouvent qu'ils sont assez bons en sport.	____	____
3	____	____	Certains jeunes pensent qu'ils pourraient bien réussir à n'importe quel sport, même ceux qu'ils n'ont jamais essayés.	MAIS	D'autres jeunes craignent de ne pas être capable de bien réussir dans un nouveau sport.	____	____
4	____	____	Certains jeunes trouvent qu'ils sont meilleurs que les autres jeunes de leur âge dans les sports.	MAIS	D'autres jeunes trouvent qu'ils ne jouent pas aussi bien que les autres.	____	____
5	____	____	Dans les jeux et les sports, certains jeunes regardent plutôt que de jouer.	MAIS	D'autres jeunes préfèrent jouer que de regarder.	____	____
6	____	____	Certains jeunes ne sont pas très bons dans des nouveaux jeux extérieurs.	MAIS	D'autres jeunes sont bons immédiatement dans des nouveaux jeux.	____	____

APPENDIX C

Questionnaire Concerning Experiment (Goal-Setting)

Circle the number that best represents your opinion.

1. During this activity did you practice free throwing on other occasions (at home, during recess, at a friend's place...) ?

1 2 3 4 5 6 7 8 9 10
Rarely Sometimes Often

2. Did you already know the proper method of throwing the basketball before starting this experiment?

1 2 3 4 5 6 7 8 9 10
Not at all A little a lot

3. Did you find that all this shooting practice was boring?

1 2 3 4 5 6 7 8 9 10
Not at all Very boring

4. Do you think that you have learned to throw better after this training?

1 2 3 4 5 6 7 8 9 10
Not really A little A lot better

5. Do you think that you are able to throw the ball better after this training?

1 2 3 4 5 6 7 8 9 10
Not really A little Much more

6. Would you recommend this training to a friend who does not know how to throw a basketball?

1 2 3 4 5 6 7 8 9 10
Not really Maybe Certainly

7. Did you find that using goals helped you get better scores?

1 2 3 4 5 6 7 8 9 10
No A little A lot

8. Do you prefer to choose your own goals to succeed?

1 2 3 4 5 6 7 8 9 10
No Maybe Certainly

APPENDIX C-1

Questionnaire Concerning Experiment (Goal-Setting) (French Version)

Questionnaire sur les tirs au panier (1994)

Encercle le chiffre le plus juste.

1. Pendant cette activité est-ce-que tu as pratiqué des lancers au panier ailleurs qu'au gymnase (maison, chez un ami, dans la cour)? 1 2 3 4 5 6 7 8 9 10
Rarement Des fois Souvent

2. Savais-tu déjà bien lancer au panier avant de faire cette expérience? 1 2 3 4 5 6 7 8 9 10
Un peu Bien Très bien

3. Est-ce-que tu as trouvé que c'était long et ennuyeux de pratiquer autant de tirs au panier (au-delà de 800 tirs)?
1 2 3 4 5 6 7 8 9 10
Pas ennuyeux Très ennuyeux

4. Crois-tu avoir appris à mieux lancer au panier avec cet entraînement? 1 2 3 4 5 6 7 8 9 10
Rien Un peu Beaucoup

5. Est-ce que tu penses que tu sais mieux lancer au panier maintenant? 1 2 3 4 5 6 7 8 9 10
Non Un peu mieux Bien mieux

6. Est-ce que tu recommanderais à une-e ami-e qui ne sait pas lancer au panier et qui voudrait l'apprendre, de faire l'expérience que tu viens de faire?
1 2 3 4 5 6 7 8 9 10
Non Peut-être C'est sûr

7. Trouves-tu que l'utilisation des objectifs t'a aidé à avoir des meilleurs pointages? 1 2 3 4 5 6 7 8 9 10
Non Un peu Beaucoup

8. Préfères-tu choisir tes propres objectifs pour mieux réussir?
1 2 3 4 5 6 7 8 9 10
Non Peut-être C'est sûr

APPENDIX D

Questionnaire Concerning Experiment (Do-your-best)

Circle the number that best represents your opinion.

1. During this activity did you practice free throwing on oher occasions (at home, during recess, at a friend's place...)?

1 2 3 4 5 6 7 8 9 10
Rarely Sometimes Often

2. Did you already know the proper method of throwing the basketball before starting this experiment?

1 2 3 4 5 6 7 8 9 10
Not at all A little A lot

3. Did you find that all this shooting practice was boring?

1 2 3 4 5 6 7 8 9 10
Not at all Very boring

4. Do you think that you have learned to throw better after this training?

1 2 3 4 5 6 7 8 9 10
Not really A litte A lot better

5. Do you think that you are able to throw the ball better after this training?

1 2 3 4 5 6 7 8 9 10
Not really A little Much more able

6. Would you recommend this training to a friend who does not know how to throw a basketball?

1 2 3 4 5 6 7 8 9 10
Not really Maybe Certainly

7. Did you give yourself goals to achieve when you were being tested at the end of each training session, like telling yourself you would try for 7 out of 10 baskets or 5 out of ten on that day?

1 2 3 4 5 6 7 8 9 10
No Sometimes Every time

APPENDIX D-1

Questionnaire Concerning Experiment (Do-your-best)
(French Version)

Questionnaire sur les tirs au panier (1994)

Encercle le chiffre le plus juste.

1. Pendant cette activité est-ce que tu as pratiqué des lancers au panier ailleurs qu'au gymnase (maison, chez un ami, dans la cour d'école)? 1 2 3 4 5 6 7 8 9 10
Rarement Des fois Souvent

2. Savais-tu déjà bien lancer au panier avant de faire cette expérience? 1 2 3 4 5 6 7 8 9 10
Un peu Bien Très bien

3. Est-ce que tu as trouvé que c'était long et ennuyeux de pratiquer autant de tirs au panier (au-delà 800 tirs) ?
1 2 3 4 5 6 7 8 9 10
Pas ennuyeux Très ennuyeux

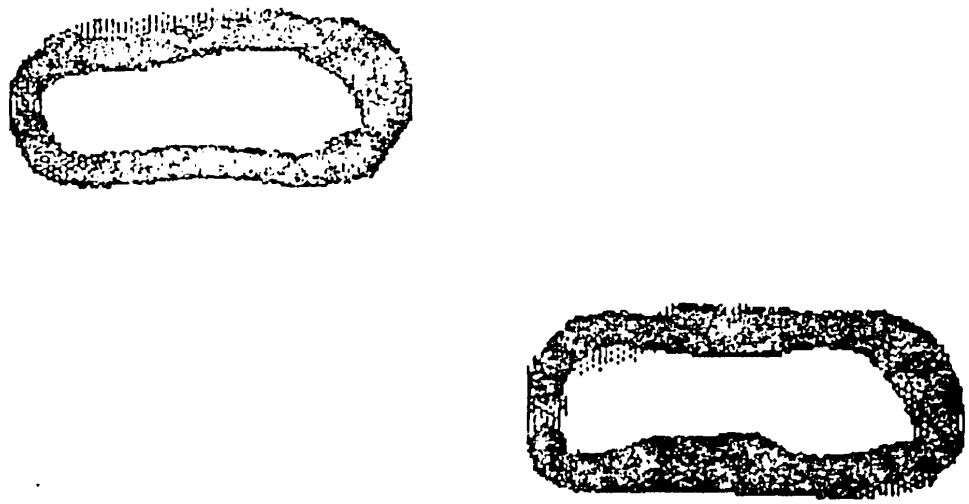
4. Crois-tu avoir appris à mieux lancer au panier avec cet entraînement? 1 2 3 4 5 6 7 8 9 10
Rien Un peu Beaucoup

5. Est-ce que tu penses que tu sais mieux lancer au panier maintenant? 1 2 3 4 5 6 7 8 9 10
Non Un peu mieux Bien mieux

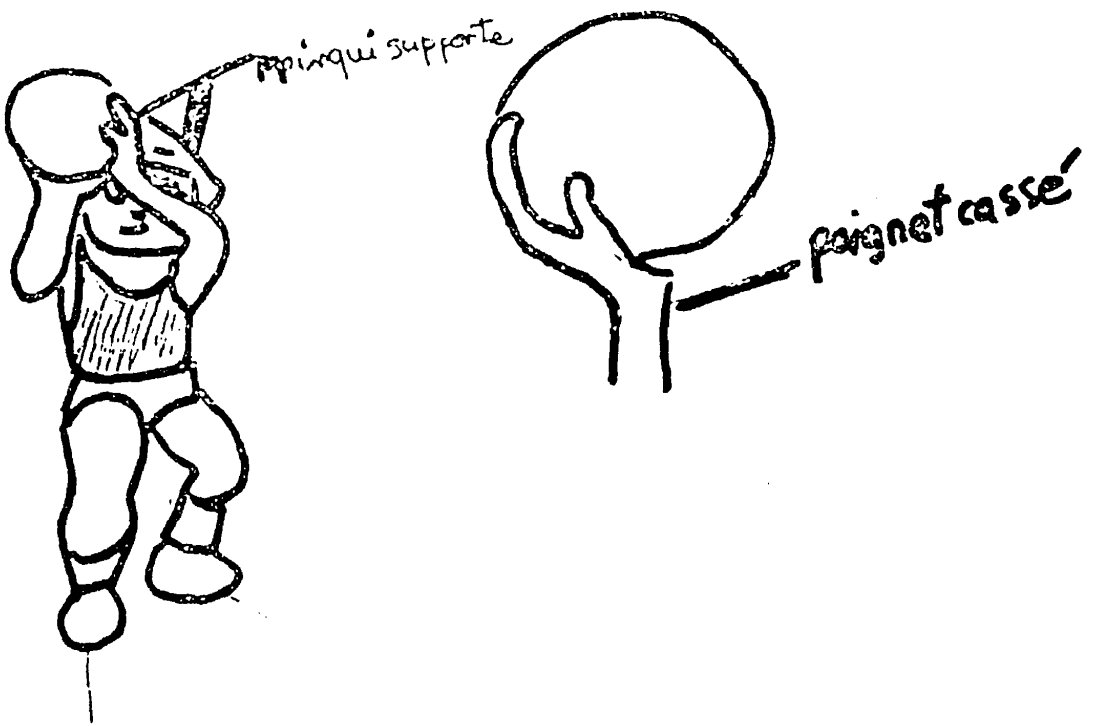
6. Est-ce que tu recommanderais à une-e ami-e qui ne sait pas lancer au panier et qui voudrait l'apprendre, de faire l'expérience que tu viens de faire?
1 2 3 4 5 6 7 8 9 10
Non Peut-être C'est sûr

7. Est-ce que tu te fixais des objectifs quand tu étais évalué sur tes lancers, c'est-à-dire, te disais-tu "Je veux en réussir 7 sur 10 aujourd'hui ou 5 sur 10"?
1 2 3 4 5 6 7 8 9 10
Non Parfois A chaque fois

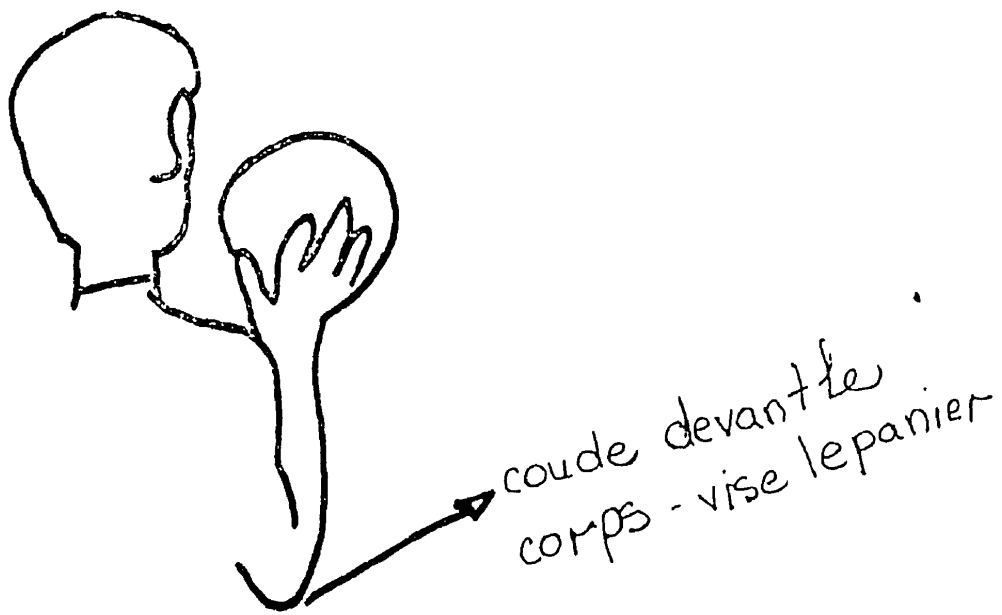
1. Pieds écartés a largeur d'épaule, pied de la main qui lance avance, genoux flechis



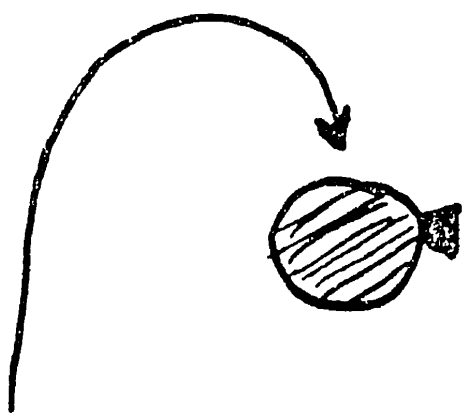
2. Main qui supporte le ballon, sur le côté
Doigts bien écartés, ballon sur les doigts
et le haut de la main
Poignet cassé vers l'arrière



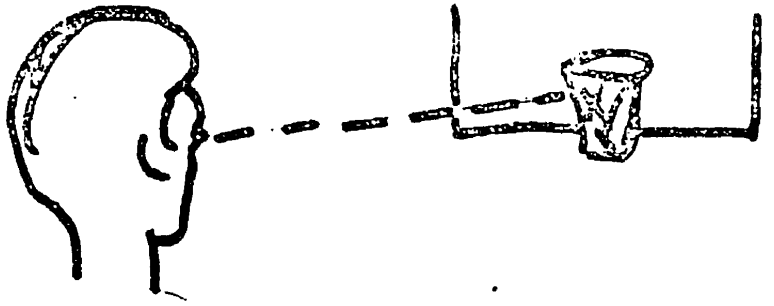
3. Coude qui pointe vers l'intérieur devant le corps, orienté vers le panier

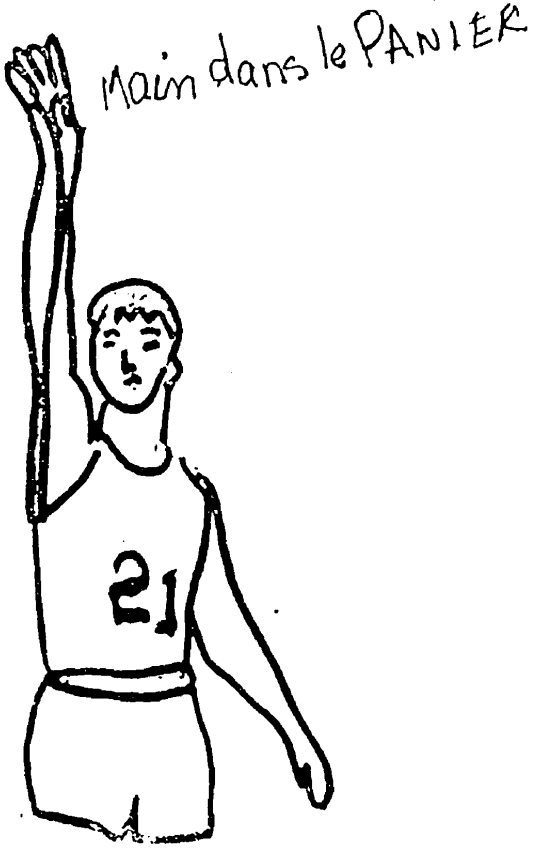


4. Lancer le ballon vers le haut et par-dessus l'anneau (on ne veut pas qu'il touche le panneau)



5. Yeux fixés sur la cible jusqu'au moment où le ballon en touche une partie. Imaginez que vous allez mettre la main dans le panier.





APPENDIX F

QUALITATIVE ASSESSMENT OF FREE THROW

CHILD'S NAME: _____

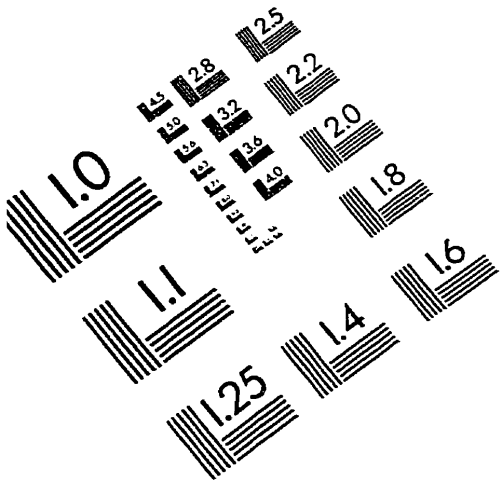
		DATE Pre test	DATE Post test
A. Feet position:	1) Spread shoulder width apart		
	2) Leading foot ahead(throwing arm)		
	3) Knees flexed		
B. Ball grip:	1) Balance hand on side		
	2) Fingers spread		
	3) Ball not resting on heel of hand		
	4) Wrist hyperextended (LOCK AND COCK)		
C. Elbow position:	1) Elbow UP, IN AND in front of body		
	2) THRUST UP AND OVER (check for backspin)		
D. Eye tracking:	Keep eyes focused above rim until ball touches any part of the basket		

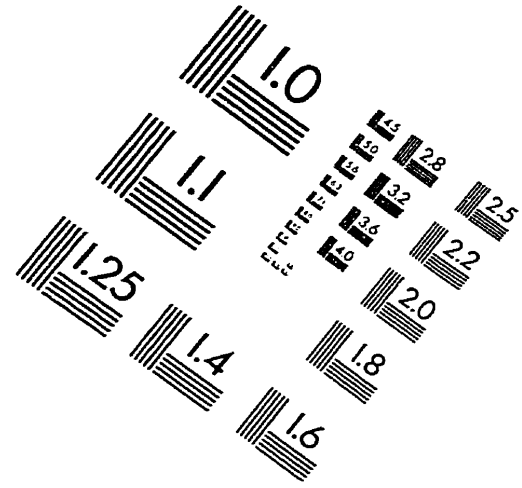
Total: ___ ___

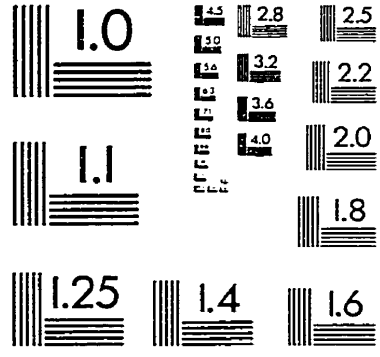
N.B. Indicate in first column a 1 for pass and 0 for fail then calculate the total out of 10.

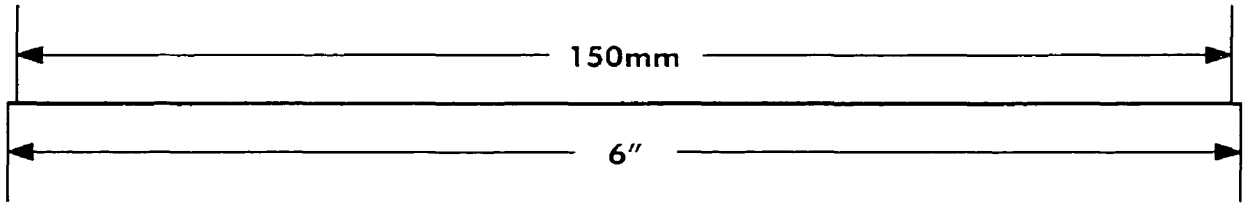
Ref.: Krause, J. (1984).

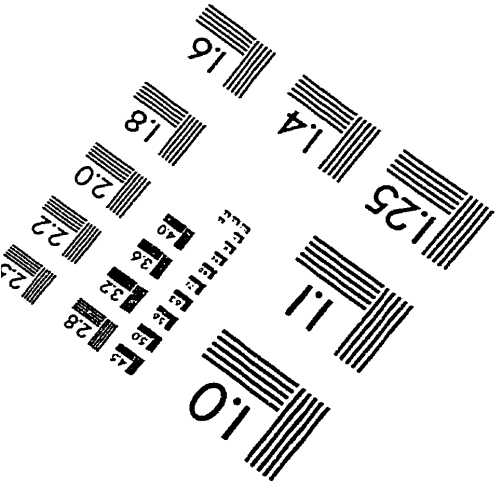
IMAGE EVALUATION TEST TARGET (QA-3)

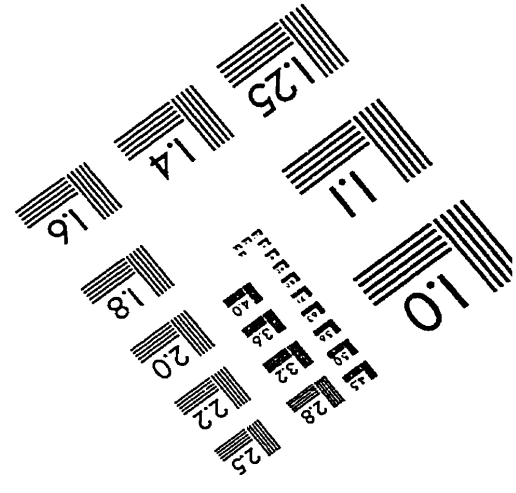












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