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THE UNIVERSITY OF ALBERTA

A PROFILE OF THE LEISURE PURSUITS OF SEVEN PHYSICALLY AWKWARD CHILDREN

BY

LAURIE DAWN CLIFFORD

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled A PROFILE OF THE LEISURE PURSUITS OF SEVEN PHYSICALLY AWKWARD CHILDREN submitted by LAURIE DAWN CLIFFORD in partial fulfilment of the requirements for the degree of Master of Arts.

.....

Supervisor

Jane Watkinson

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Date: October 9, 1985

ABSTRACT

The major purpose of this study was to identify a group of truly physically awkward children and to determine the free time leisure pursuits in which they regularly participated.

Seven children, three males and four females ages 9-11, were identified as being physically awkward based on the results of two administrations of a Motor Performance Test Battery, conducted one year apart, and a Motor Performance Teacher Rating Scale. The parents of each of these children were interviewed to determine their involvement in Neighbourhood Recreational and in Community-Sponsored Activities.

Group and individual profiles of the seven physically awkward children were presented. These profiles included subject characteristic data (i.e., sex distribution, birth rank, preferred handedness, and height/weight data), motor performance data (i.e., the results of the two motor performance assessments and the teacher rating scale), psychometric data (i.e., Intelligence Test Scores and Incidence of Reading Disability, Harter Perceived Competence Scale scores), neighbourhood recreational activity data (i.e., neighbourhood group outdoor play, neighbourhood, individual outdoor play, home indoor activities and social play preference in neighbourhood play situations), and Community-Sponsored Activity data (i.e., participation in social organizations, minor sports leagues, camp situations, lessons and the Parents' appreciation of the problem).

Although the group of seven children included in this study was comprised of relatively equal numbers of males and females, few of the other marker variables which have been reported by other researchers

were displayed by these children. No trends were apparent with respect to birth rank, incidence of ambidexterity, discrepancies in intelligence test scores, or feelings of incompetence as measured by the Harter Perceived Competence Scale. A tendency towards being overweight and exceedingly low scores on both the Motor Performance Test Battery and the Motor Performance Rating Scale were noted, however.

The results of the Free Time Leisure Pursuits Questionnaire indicated that this group of children participated in a limited number of activities. They preferred individual as opposed to group activities and activities which were low in spatial and temporal task demands. Their few after school playmates tended to be younger than themselves. Although they all had been enrolled in at least one community-sponsored activity, they had had a history of quitting these types of activities.

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CHAPTER

INTRODUCTION

During the past 20 years, research in the field of physical awkwardness has undergone a number of changes. Early studies linked concomitant movement difficulties to medical syndromes (Spillane, 1942; Doll, 1951; Prechtl and Stemmer, 1962) and later to learning disabilities (Paine, 1967; Brenner, Gillman, Zangwill and Farrell, 1967). Recently motor learning theorists have emphasized the importance of developing a broader approach to motor development in order to understand the complexity of the problem of physical awkwardness (Wall, McClements, Bouffard, Findlay and Taylor, 1985).

A number of empirical studies have been conducted to determine the indicence of physical awkwardness (Brenner et al., 1967; Keogh, 1968; Gubbay, 1975; Henderson and Hall, 1982). Based on the results of these varied studies, researchers contend that physical awkwardness affects 5 to 10% of regular school children. Such a high incidence figure makes physical awkwardness one of the leading handicapping conditions affecting children (Wall, 1982). Clearly the widespread incidence of physical awkwardness supports the need for further investigation in this field.

Researchers have repeatedly emphasized the need for reliable motor performance test batteries to identify awkward children (Morris and Whiting, 1971; Gubbay, 1975; Keogh et al., 1[illegible]; Wall, 1982). In 1982, Taylor conducted a study which addressed the validity and reliability of a motor performance test battery designed to assess the motor skills of school-aged children. Using a revision of the Stott Test of Motor Impairment (Stott, Moyes and Henderson, 1972), Taylor determined that

awkward children from their peers: Dodge Run, Throw and Catch, Throw, Clap and Catch, Stork Balance, Wide Board Balance and Controlled Jump (Taylor, 1982).

In addition to the quantitative information obtained from motor performance test batteries, researchers have recognized the value of qualitative assessment tools. Motor performance rating scales and checklists have been developed by a number of researchers for the identification of awkward children (Sugden, 1972; Gubbay, 1975). Umansky's (1983) Teacher Rating Scales was one of the first to address the issue of culturally-normative motor tasks. "Culturally-normative skills are those that are generally used within a specific culture at certain ages by a majority of people" (Wall and Taylor, 1984, p. 159). Umansky's Rating Scale was comprised of tasks which were culturally-normative for six to eleven year old children in Edmonton, Alberta. Wall (1982) contends that culturally-normative tasks are crucial variables in the identification of physically awkward children. Since the cultural expectations of the performance of motor skills are so diverse, effort must be made to ensure that children are identified as being physically awkward within the context of their own culture. For example, ice skating is a skill which is culturally-normative for children from Edmonton, it may not be for children from Vancouver and would definitely not be for children from Miami. Thus when determining the appropriateness of specific tasks in motor performance tests and rating scales the immediate culture of the children involved must be considered.

Wall (1982) has suggested that awkward children display a syndrome of behaviours which arise as a direct consequence of their lack of

experienced by awkward children results in disinterest in and avoidance of physical activity situations. Furthermore, the frustration caused by repeated failure in physical activities is frequently manifested in a number of behavioural problems (McKinlay, 1978; Baker, 1981; Symes, 1972; Wall, 1982).

The "syndrome" approach to understanding physical awkwardness emphasizes the complexity of the factors which affect these children. Such factors as a tendency towards being overweight, having few or younger playmates, having a preference for individual as opposed to group activities, and having a history of failure in physical activities are characteristics that researchers assume physically awkward children will exhibit. However, up to this time, information has not been systematically collected on these variables (Wall, 1982).

Although the study of physical awkwardness has increased considerably, a number of questions regarding the effects of the syndrome upon the recreational and/or leisure play habits of children remain to be investigated. Researchers suggest that since children spend most of their time under the care of parents and teachers, both are capable of recognizing motor difficulties and physical awkwardness (Gubbay, 1975). As mentioned previously rating scales have been developed to aid teachers in the identification of awkward children. Unfortunately, a similar method of focusing a parent's attention on the important aspects of motor performance, which may indicate movement difficulties, has as yet to be developed. It would be expected that the best sources of information regarding the type, frequency, and preference of play activities performed by children would be parents.

In reviewing past studies on physical awkwardness, it became evident that very little information was available on the recreational and leisure time pursuits of these children. Parents had rarely been used as a source of information on how their children had been affected by this developmental disability. Parents are usually aware of the play pursuits of their children and the degree to which their children are involved in community-sponsored activities; hence it was decided to use them in this study as a source of information on the nature of the physical awkwardness syndrome.

Inasmuch as a sub-group of physically awkward children had been identified in the IBM-University of Alberta Learning Disabilities Project it was decided to select a small group of these children for more intensive investigation. As mentioned above, physical awkwardness seems to be associated with a syndrome of behaviours stemming from a lack of proficiency in culturally-normative motor skills. The associated behaviours include a lack of interest in physical activities, low physical fitness, difficulties making and keeping playmates and in some cases, behavioural or social difficulties in group settings. To collect information on this syndrome it was decided to have teachers rate the motor performance of the children involved and to have the parents of these children complete an indepth interview on their recreational, leisure time, and social interests.

Problem Statement

The purpose of this study was to identify through the use of quantitative and qualitative instruments, a group of children who were truly physically awkward; and to describe some of the major characteristics of this group through the use of psychometric, motor performance,

recreational and leisure time data.

The following questions will be addressed in this study:

1. Can a group of truly physically awkward children be identified by using results from two administrations of a Motor Performance Test Battery?
2. If so, what are the major psychometric characteristics of the children in this group?
3. After completing a structured Motor Performance Rating Scale to what extent will teachers rate these children as being physically awkward?
4. What are the individual and group leisure time pursuits of these children?
5. To what extent are these children involved in community-sponsored activities?

Delimitations

This study was delimited to participants in the IBM-University of Alberta, Learning Disabilities Project who met the following criteria: those children who were identified as being physically awkward based on the results of two administrations of the Motor Performance Test Battery (Taylor, 1982, Appendix A) conducted in 1981 and 1982; and who were rated by their physical education teachers as being physically awkward.

Seven children, four females and three males, comprised this sample of truly physically awkward children.

Limitations

The following were limitations of this study. The Motor Performance Test Battery (Taylor, 1982) was initially administered to the control group of the IBM-University of Alberta, Learning Disabilities Project in

November 1981 and to the reading disabled (RD) group in February and March 1982. This time line discrepancy resulted in the RD sample being three months older than the control sample at the time of assessment. It also lessened the period between assessments from twelve months for the control to nine months for the RD sample.

A number of physical education teachers were hesitant to complete the revised Gross-Motor Performance Rating Scale (Umansky, 1983, Appendix B). Three teachers completed the rating scale with the help of the investigator.

Some of the physical education teachers had difficulty understanding the 'prediction factor' utilized in Umansky's rating scale. In situations where teachers had not actually observed specific motor behaviours, Umansky required them to predict how well their pupils might perform such skills. Some of the teachers reported having considerable difficulty in completing this task. In these instances the teachers were again contacted and asked to predict how the child would perform the specific task. At this time the teachers usually chose the "adequately" or middle category of the five point Likert scale.

The Harter Perceived Competence Scale (Appendix C) was administered to the IBM-University of Alberta, Learning Disabilities Project sample in January and February 1983, by testers involved in the motivation aspect of the project. They obtained an incomplete score for one of the seven truly physically awkward children. As this information was necessary for this study, the Harter Scale was re-administered to this child in mid-June 1983.

Definition

Physically Awkward Children - Physically awkward children are children without known neuromuscular problems who fail to perform culturally normative motor skills with acceptable proficiency (Wall, 1982, p. 254). The operational definition for truly physically awkward children used in this study was based on the results of two administrations of the Motor Performance Test Battery and the Motor Performance Rating Scale. Children who received three test scores at or below the 10th percentile for their particular age and sex categories in both test sessions and who were rated by their teachers as being physically awkward were included in the sample.

CHAPTER II

SELECTED REVIEW OF LITERATURE

Physical Awkwardness

For years, excessively clumsy behaviour or physical awkwardness has been observationally linked to the area of learning disabilities. Studies dealing with minimal cerebral dysfunction (Paine, 1968), visuo-motor disorders (Brenner, Gillman, Zangwill and Farrell, 1967) and specific learning disabilities (Orton, 1937) have identified characteristics of physical awkwardness as existing in conjunction with learning disorders such as dyslexia and dyscalculia.

In contrast to this association, "medical literature has often suggested that there is a specific childhood syndrome in which clumsiness or exceptionally poor motor coordination is the dominant characteristic" (Henderson and Hall, 1982, p. 448). Although researchers have identified physically awkward children with above average intelligence, who were competent in both reading and mathematics (Henderson et al., 1982; Gordon, 1969), Henderson and Hall have reported that such cases are rare. Whether or not physical awkwardness occurs in isolation or with other learning disorders, some researchers contend that physically awkward children are a definite sub group of the learning disabled population (Wall, 1982).

History of Physical Awkwardness

As early as 1937 scientific research was published which identified the existence of gross motor problems in children. In his book Reading, Writing and Speech Problems in Children, Orton (1937) identified a

correlation between difficulties in acquiring the movement patterns of speech and writing with problems in performing gross-motor movements.

During the following twenty years, medical research repeatedly made reference to syndromes which had motor impairment or physical awkwardness as key characteristics, syndromes such as Congenital Gerstmann's Syndrome (Spillane, 1942), Neurophrenia (Doll, 1951) and Choreiform Syndrome (Prechtl and Stemmer, 1962).

During the 1960's a greater interest in the motor problems of children became evident. Educators working in the area of learning disabilities (L.D.) recognized poor motor coordination and general clumsiness as characteristics often displayed by L.D. children (Brenner et al., 1967; Paine, 1968). As a result, physicians and educators continued to examine what has been referred to as physical awkwardness.

In 1962 Walton, Ellis and Court published a paper which examined the characteristics of five children diagnosed as having developmental apraxia or agnosia. These children were awkward in performing the daily life skills of dressing and feeding themselves, walking, writing, drawing and copying. They were unable to catch a ball and demonstrated cross laterality. Although they obtained I.Q. scores within the normal range, they all performed significantly better on the verbal than on the performance subtests of the Weschler Intelligence Scale for Children. The authors concluded that further examination of developmental disorders "involving speech, reading, movement and spatial orientation" (p. 609) was needed.

An extension of this study was conducted in 1965 by Gubbay, Ellis, Walton and Court. They examined the case studies of twenty-one apraxic children, four of whom had been reported in the paper by Walton et al. (1962), to determine possible etiologies. Although they proposed three

(inadequate establishment of cerebral dominance, delayed maturation and structural lesions in one or other parietal lobe), they concluded that most cases were a result of "underlying brain damage" (p. 311).

In 1966 Stott, Moyes and Henderson developed a revision of the Oseretzky Test of Motor Ability to identify physically awkward children. Their Test of Motor Impairment was designed to identify 10-15% of the normal school population: the incidence level of movement difficulties reported by Pringle, Butler and Davie (1966) in the British National Child Development Study.

In 1967 Brenner et al. conducted the first study to determine the incidence of what they referred to as Visuo-motor disability in regular school children. Their eleven item screening procedure identified 54 of 810 or 6.7% of their sample as having a "specific developmental disability" (p. 259) in the visuo-motor area. It is interesting to note that while

> . . . most of these children had for years been regarded by their parents as abnormally awkward or clumsy, and by their teachers as untidy, difficult and irritating . . . none had been referred to the educational psychologist or the child-guidance services (p. 261).

After further examination of this sample the authors suggested that the probable cause of their visuo-motor impairment was "organic cerebral dysfunction" (p. 261). Brenner et al. (1967) concluded "that agnosic-apraxic disabilities, in otherwise normal children (were) by no means rare and warrant(ed) wider recognition" (p. 262).

Paine (1968) described what he termed "syndromes of minimal cerebral damage" in the following manner. Children in this

> . . . heterogeneous group show varying degrees and varying combinations of abnormalities in coordination and other neurological signs, behaviour, performance at school, results of psychological tests and frequently electroencephalograms (p. 780).

He reported that children exhibiting this dysfunction were usually not identified until they attended school and were compared to their peers in both academic and motor tasks. However, hyperactivity or excessive clumsiness, which often included delays in obtaining developmental milestones, were the most common reasons parents sought medical diagnosis for their preschoolers.

Paine recognized that while awkwardness was usually identified in the school setting, the emphasis in this setting was obviously towards fine-motor coordination and visual-motor function rather than gross-motor difficulties. Thus problems in writing, drawing, tying shoe laces and fastening buttons would be identified sooner than problems in running, jumping and hopping.

As a result of the characteristics associated with minimal cerebral damage, Paine reported that such children were often disruptive in the classroom. "An overlay of emotional difficulties is present almost as a rule, and often this is erroneously suspected of being the primary problem" (p. 788). "One sees children of this type with disproportionate frequency in psychiatrists offices, in child guidance clinics, in juvenile courts and among school dropouts" (p. 799).

In 1968 Reuben and Bakwin published a paper on developmental clumsiness which reported that physically awkward children experienced psychological problems at school as a result of their disability. Furthermore they suggested that early diagnosis and remediation of developmental clumsiness would lessen the psychological pressures placed upon these children. This approach to the problem of physical awkwardness challenged the minimal cerebral damage eitiology or the deficit model purported by earlier researchers. Instead it suggested that the lack of motor skills which characterized these children could be ameliorated

through specific remediation.

By utilizing the case study approach Dare and Gordon (1970) documented the existence of a wide degree of heterogeneity in the symptoms exhibited by clumsy children. They discovered

> . . . that (while) some (children) may be handicapped in all aspects of development, (others) may show evidence of minimal cerebral palsy (and still) others may present a specific disability apparently affecting only the acquisition of skilled movement (p. 181).

The authors emphasized the need for a screening device to identify awkward children upon entry into the school system. Like Reuben and Bakwin (1968) they believed that early identification and appropriate remediation would help alleviate the "secondary emotional disturbances" (p. 184) which they suggest were direct consequences of physical awkwardness. In their discussion of the management of physical awkwardness, Dare and Gordon suggested "that (while) constant practise (would) probably improve (a child's) performance, some activities (would be) worse than others and (would) need to be circumvented" (p. 183).

In 1982 Taylor conducted an empirical study of regular school children, to determine the incidence of physical awkwardness in Edmonton, Alberta, Canada. Using a modification of the Stott Test of Motor Impairment she identified 48 of the 240 reading disabled and normal children tested, or 20% as being physically awkward. The sample in this study was comprised of equal numbers of males and females. It is interesting to note, however, that twice as many children with concomitant reading problems were identified as physically awkward than were control children.

Although Taylor used a rather arbitrary operational definition of physical awkwardness, the theoretical definition she chose was based on the results of the studies presented previously.

> Physically awkward children are children without known neuromuscular problems who fail to perform culturally normative motor skills with acceptable proficiency (Wall, 1982, p. 254).

The following section will outline how the author of this definiti Wall, has studied the broader aspects of physical awkwardness, thereby defining the syndrome of physical awkwardness.

Syndrome of Physical Awkwardness

Wall has extended his definition of physical awkwardness to includ a syndrome of behaviours which are apparent in gross-motor physical activity settings. He contends that the physical awkwardness syndrome is "a cluster of behaviours which stem from a child's inadequate motor performance" (Wall, 1982, p. 255). While physical awkwardness is a definite disadvantage in both the playground and the physical education class, it could be argued that it is the syndrome of behaviours which is detrimental to the well being of the child.

Although researchers in the field of physical awkwardness have come from different theoretical backgrounds, have used various research methodologies and have chosen numerous labels to identify their subjects they are in agreement that a lack of proficiency in motor skills is the central feature of the syndrome.

In 1977 Bruininks and Bruininks conducted an empirical study of the motor proficiency of L.D. and non-disabled students. Using the Bruininks Oseretzky Test of Motor Proficiency they found that the L.D. students were significantly lower than the non-disabled students in overall motor performance and appeared to be more variable in performance than their non-L.D. counterparts. "They were most deficient in balance skills and simultaneous or sequential bilaterial coordination of movements involving arms and legs" (p. 1134).

(Paine, 1968, Gubbay, 1975; Brenner et al., 1967; and Brunt, Magill and Eason, 1983) and by developmental lag theorists (Illingworth, 1968; Annell, 1949; Gordon, 1969) as being common characteristics of physically awkward children during their preschool years. In school age children the literature repeatedly cites poor coordination and balance, difficulties in climbing, jumping, hopping, running, throwing and catching and ineptness in games as the motor skills most frequently deficient in awkward children (Arnheim and Sinclair, 1979; McKinlay, 1978; Gordon, 1969; Paine, 1968; Illingworth, 1968; Walton et al., 1962; and Annell, 1949).

In 1982 Wall identified and discussed the idea of culturally-normative motor skills.

> Culturally-normative physical skills are skills that are generally used within a specific culture by a large majority of people. Skills such as running, jumping and climbing are culturally-normative in many environments, whereas skills like catching a baseball, hitting a cricket ball and high-kicking a stuffed seal skin are identified with other cultural environments (p. 254).

It is the lack of skill in culturally-normative motor tasks which limits the type and number of activities available to physically awkward children. As a result, they find it increasingly difficult to become involved in play and sport situations.

In trying to deal with these problems physically awkward children often resort to socially unacceptable behaviour. Aggressiveness, truancy and daydreaming are coping mechanisms which are frequently used by awkward children (Annell, 1949; Henderson and Hall, 1982).

(McKinlay, 1978; Symes, 1972; Reuben and Bakwin, 1968; Abbie, Douglas and Ross, 1978; and Baker, 1981). It is not surprising then that awkward children tend to avoid vigorous activity which may in turn result in low levels of physical fitness (Wall, 1982).

The interaction among the lack of culturally-normative motor skills, interest and participation in physical activity and the resultant behavioural problems is at the heart of the physical awkwardness syndrome (Wall, 1982).

Incidence of Physical Awkwardness Syndrome

In trying to determine the incidence of a given syndrome, it is important to identify demographic factors to be used as the independent variables of the study. Age, intelligence level, learning disorders, socio-economic status and cultural background are factors which have the potential to confound studies designed to determine the prevalence of physical awkwardness.

A number of these factors have been ignored by researchers in this field. Thus it is somewhat surprising that the results of incidence studies published from countries such as Australia, Great Britain and Canada are remarkably robust in the percentage of children that are identified as being physically awkward.

As mentioned earlier Brenner et al. (1967) studied 810, eight and nine year old, regular school children (427 males and 383 females) and identified 54 or 6.7% as being what they termed visuo-motor disabled. They found no significant difference between the incidence of males and

test battery and identified 13% as being awkward and a further 7% as severely awkward.

Gubbay (1975) studied the incidence of physical awkwardness in Australia. After surveying 919, eight to twelve year old children, he identified 56 or 6.1% as being clumsy. Subjects in his study attended one of five government primary schools in metropolitan Perth. Like Brenner et al. (1967), Gubbay found no significant difference between the number of clumsy males and females identified.

In 1982 Henderson and Hall used teacher evaluations to identify 16 of 400, five to eight year old children or approximately 5% as being physically awkward. Participants of this study attended one of four infant schools in Hertfordshire, England. Thirteen males and three females comprised their sample of awkward children.

In 1982 Taylor used a revision of the Stott Test of Motor Impairment to screen 280, eight, ten and twelve year old, reading disabled (R.D.) and control children who attended regular schools in Edmonton, Alberta. Forty-eight children or 20% of the sample were identified as being physically awkward. Within this sample Taylor identified twice as many R.D. as control children. Although she found no significant difference between the total number of awkward males and females, it is interesting to note that a significantly greater number of R.D. males was identified compared to control males. After further analysis she identified 10.8% of the 240 subjects as being severely physically awkward.

For the most part the aforementioned studies have documented the age and sex of both the initial and awkward samples under investigation. It is interesting to note, however, that while researchers have

has been the only one to analyze her results using this factor as an independent variable. In so doing she documented a definite interaction between sex, specifically males, and reading difficulty. It is this interaction which may explain the preponderance of awkward males identified by Henderson and Hall (1982).

While most of the incidence studies identify the location of the schools from which the sample was identified, little information regarding the socio-economic status of the neighbourhood has been presented. In the studies which identify a matched control sample (Gubbay, 1975; and Henderson and Hall, 1982) it is usually assumed that the next child on the school register would be of the same socio-economic background.

Taylor's study was the only one reviewed that consdered the cultural background of the children. A criterion for inclusion in her initial sample was that English be the first language of the child.

As mentioned earlier, Wall's notion of culturally-normative skills has redefined the study of the physically awkward syndrome. If the expectations of a child's home environment or culture are different from those of the school setting, the question arises as to which skills are culturally-normative to him/her. Consequently, a number of the so-called culturally-normative tasks which are included in motor performance test batteries may in fact be novel tasks to some children. Performance scores obtained by these children would therefore be suspect.

Assessments

Motor Performance Checklists

For a number of years checklists and behavioural rating scales have been utilized by researchers in the area of developmental disorders. In

the detailed and systematic observations obtained from rating scales provide the qualitative information which complements the quantitative data obtained from performance tests.

The ease with which good rating scales can be administered by untrained professionals and the minimal cost involved, in both time and money, are key reasons why they are being developed as initial screening devices for physically awkward children.

In 1972 Sugden designed a classroom checklist to identify physically awkward children. He included items from three general areas: classroom tasks, playground tasks, and physical activity related behaviours. Subsequent studies by Reynard (1975) and Calkins (1977) reported that when used in conjunction with other assessment devices Sugden's checklist did not identify the same sample of awkward children.

Gubbay (1975) recognized the importance of the subjective data which could only be acquired by the use of a checklist. In his study he included a 7 item behavioural screening checklist for teachers. Although the results of the checklist significantly differentiated the awkward from the control sample, the vagueness of the 7 items leads one to question the validity of these results (Taylor, 1982).

Henderson and Hall (1982) sought the expertise of regular classroom teachers in recognizing physical awkwardness. Over the course of a year, participating teachers met with the researchers to discuss the issues surrounding physical awkwardness. Instead of implementing a rating scale, Henderson and Hall simply requested that the teachers identify any children "who had poor motor coordination for his or her age and whose lack of coordination was significantly affecting school progress" (p. 449). In this study the teachers' recommendations closely matched

developmental examination.

In 1983 Umansky developed a rating scale of overt culturally-normative motor activities "to differentiate children with motor performance difficulties from normal peers" (p. iv). Although three rating scales were developed the ease with which teachers could effective identify awkward children was examined using only the grade three and the grade five scales. Umansky concluded that teachers were able to identify awkward children using her gross-motor performance rating scale. Furthermore, she reported that the participating teachers found the rating scale straight forward and easy to use.

Although motor performance rating scales have the potential to be effective screening devices for the identification of awkward children, few have addressed the research design questions of validity and reliability. Reynard (1975) suggested that the overt behaviours included in many rating scales were unrelated to play, sport or school activities. This lack of ecological validity is paramount to the issue of tapping culturally-normative tasks. Frequently items included in rating scales identify behavioural problems which may or may not be a result of physical awkwardness (Keogh et al., 1979). The internal validity of such rating scales is therefore highly questionable.

Most researchers have found it difficult to determine the reliability of teacher rating scales. By definition the classroom teacher is required to rate performance based on his/her familiarity with the child. Generally, in the elementary school setting, there is only one teacher who could adequately complete this type of scale. A reliability check, the next year, by the subsequent teacher may be conducted, however, it is expected that an awkward child's performance would change over the

course of a year.

Motor Performance Batteries

Motor performance screening devices provide the quantitative data which is used to identify physically awkward children. Although a number of test batteries have been developed over the years, many share common problems in research design. In 1976, Lewko reviewed 256 tests used in assessing motor impairment. He noted that many of these tests were used to assess individuals who were not included in the original norming sample. Furthermore, the people using the tests were often unfamiliar with the standardization procedures and testing techniques that were recommended by the test developers.

In developing a motor performance test battery it is important to include items which tap different aspects of motor development and truly reflect the developmental abilities of the child in a standardized manner. The following studies illustrate how some researchers have attempted to develop and refine motor performance test batteries.

In 1923 a Russian, N.A. Oseretzky, published a test which was designed "to aid in a very broad diagnosis of neurological and motor deficiency" (Morris and Whiting, 1971, p. 159). Over the following 30 years Oseretzky and other European researchers further developed and evaluated his original test (Van der Lugt, 1939; Yarmolenko, 1933; and Decroly and Bratu, 1934).

In 1955 Sloan published a revision of Oseretzky's work, the Lincoln/Oseretzky Test. He selected only the items from the original battery which

> . . . minimized any cultural or sex bias and permitted reliable scoring. (He) also disregarded those that required elaborate testing materials and those that were believed to have a significant positive correlation with age (Morris and Whiting, 1971, p. 167).

As a result his test retained only 36 of Oseretzky's original 85 items.

Prior to 1960, all of the adaptations to the Oseretzky test were designed to "calculate the motor age of a child and to draw conclusions on the basis of comparisons with the performance of normal children (Morris and Whiting, 1971, p. 171). Gollnitz (1960) and Stott et al. (1966) took a different approach by selecting items from the Oseretzky test, which they believed would assess motor impairment rather than the motor ability of brain damaged children (Morris and Whiting, 1971).

The Stott Test of Motor Impairment (Stott et al., 1966) was developed as a screening device for use in regular schools. Consequently, the number of items included in the battery was reduced to six for each age group. In keeping with the integrity of the theoretical work of Oseretzky, the Stott Test was designed to evaluate motor speed, simultaneous voluntary movements, static coordination, manual dexterity, general coordination and synkinesia.

In 1973 an Australian, S.S. Gubbay, published another motor performance screening device. Instead of developing test items used by previous researchers Gubbay identified 17 tasks which he felt would differentiate awkward from non-awkward children. After conducting a pilot study on 208, 8-12 year olds, he selected "the eight most reliable and convenient tests of motor performance" (Gubbay, 1975, p. 233). This eight item battery assessed the child's ability to

> . . . whistle, skip, dribble a tennis ball, catch a tennis ball, tie a shoelace, thread beads, pierce a pattern of pinholes, and insert six objects of varying size and shape into appropriate slots (Gubbay, 1975, p. 233).

In 1975 Gubbay used this battery to assess 992 regular school children.

The aforementioned researchers used two very different methods of developing their respective motor performance screening devices. In

1982 Taylor combined both the methods and the items developed by Stott et al. and Gubbay to develop her own motor performance screening device. Taylor conducted a pilot study using the Stott Test of Motor Impairment and a dodge run item which she had previously developed (Taylor, 1980). After completing reliability and validity procedures on her pilot study data, Taylor selected the following items to use in her major developmental study with reading disabled and non-disabled children.

To measure upper limb coordination she chose the throw and catch and target items designed by Stott et al. and Gubbay's throw clap and catch task. Fine motor coordination was measured by Stott et al. board lacing and peg board right and left tasks. The stork balance right and left, the wide and narrow board balances right and left, and the controlled jump right and left (Stott et al.) were used along with Taylor's (1980) dodge run item to measure lower limb coordination.

Knowledge Based Approach to Motor Development

In a recent article, Wall, McClements, Bouffard, Findlay and Taylor (1985) have presented a knowledge based approach to motor development with implications for the physically awkward. Based on the work of theorists from the traditional motor development literature (Illingworth, 1968; Bruner, 1973), information processing research (Arend, 1980; Glencross, 1980; Schmidt, 1975), cognitive science (Anderson, 1982; Norman and Shallice, 1980), cognitive development (Brown, 1978; Chi, 1978; Flavell and Wellman, 1977; Kopp, 1982), and recent expert-novice studies by Allard (1980), Wall and his colleagues stressed the different types of knowledge about action that children acquire as they develop. This approach to understanding physical awkwardness focuses researchers and teachers on the different types of problems encountered by awkward

children. Furthermore, it addressed the consequences of inadequate motor skill development in terms of the physical awkwardness syndrome.

The key aspect of the Wall et al. (1985) model is the delineation of what they refer to as "knowledge about action". Briefly they propose that children develop four major types of knowledge about action; declarative, procedural, affective and metacognitive.

Declarative knowledge refers to "our knowledge of factors that influence the control of our actions" (Wall and Taylor, 1984, p. 161). Arend (1980) has proposed that the following three factors constrain movement and thus must be recognized by the performer: morphological factors or the limits placed on human movement by the neuromuscular system, biomechanical constraints or the principles of physics which govern human movement, and environmental factors, or the spatial and temporal aspects of specific performance environments. In addition to these, Wall et al. (1985) have suggested that the "information that people store about their own body image or personal spatial schema" (p. 30) is an important component of declarative knowledge about action which must be considered when we examine what develops through maturation and experience. As the play and movement patterns of children develop so does their understanding of these constraints, that is their level of declarative knowledge increases and becomes an important base through which to classify, categorize and eventually control movement. They also emphasize the crucial role played by language in the control and development of skilled action.

"Procedural knowledge about action refers to the storage of action schemas that control the cognitive and motor processes that are responsible for the execution of skilled actions" (Wall and Taylor, 1984, p. 162). Mental and physical practise of an action sequence

results in the automatization of the associated procedural knowledge. Automatization of skilled sequences is important as it frees the limited resources available to direct conscious attention, thereby allowing the learner to deal with other aspects of the performance environment.

Affective knowledge refers to the subjective feelings which children attach to their performance of motor skills and/or their feelings in action situations. Harter (1978, 1981, 1982) has reported that children who experience success in physical activity settings tend to develop feelings of competence and to display positive self-concepts in these situations. On the other hand, researchers such as Dweck (1980) and Gibson (1980) have found that "children who continually face failure begin to exhibit characteristics of learned helplessness" (Wall et al., p. 31). Clearly the affective knowledge base acquired by children can have a dramatic effect on the learning of motor skills.

Metacognitive knowledge refers to our overall understanding of declarative, procedural and affective knowledge (i.e., the information or knowledge we use to determine which tasks are within our personal skill repertoires). Wall et al. (1985) have suggested that "metacognitive knowledge is a higher type of declarative knowledge about action" (p. 31).

Closely associated with this are metacognitive skills, the problem solving strategies which are used by performers in the acquisition of motor skills. Metacognitive skills include the means by which we plan, monitor, adapt and evaluate our actions.

This approach to understanding motor development has clear implications for the physically awkward. As mentioned earlier, it illustrates the complexity of motor skill development thereby highlighting problem areas frequently encountered by physically awkward children. Unlike the

deficit and maturational lag theories which were purported as being causes of physical awkwardness, this model addresses possible causes, consequences and management techniques which may aid in breaking the vicious cycle of the syndrome of physical awkwardness.

The work of numerous researchers from diverse backgrounds has lead to our present understanding of the syndrome of physical awkwardness. As outlined previously, definitions of physical awkwardness and the resultant syndrome of behaviours have been addressed. Researchers are in agreement that the incidence of this syndrome is in the neighbourhood of 5-10% of regular school children. Consequently two major types of screening devices, overt motor performance checklists and motor performance test batteries have been developed to identify this population. Wall et al. (1985) has proposed a knowledge-based approach to motor development with implications for the physically awkward. The aforementioned literature clearly describes the "state of the art" of the syndrome of physical awkwardness.

From a clinical perspective this picture of the syndrome of physical awkwardness is incomplete. Clinicians require a more comprehensive description of the characteristics displayed by awkward children. As mentioned previously, a number of the behaviours which distinguish awkward from non-awkward children have been documented; however, specific information concerning the leisure pursuits of physically awkward children has yet to be examined.

In order for teachers and clinicians to effectively intervene and provide remediation for a child diagnosed as physically awkward, it is important to document the child's play habits. Information regarding personal interests in physical activity, number and size of playmates and previous skill instruction and physical activity experiences should

be considered when planning programs for the physically awkward. The examination of this type of information would help complete the picture of the syndrome of physical awkwardness.

CHAPTER III

METHODOLOGY

Sample Selection

A Motor Performance Test Battery (Taylor, 1982, Appendix A) was administered to 246, eight, nine and ten year old children, as part of the IBM-University of Alberta Learning Disabilities Project. One hundre and twenty-two control subjects, selected from nine schools (three low, three middle and three high socio-economic status) within the Edmonton Separate School Board, were assessed during a three week period in November 1981. One hundred and twenty-four reading disabled subjects, selected from 40 schools within the same School District, were assessed during a five week period in February and March 1982. The assessments were conducted by 12 graduate and undergraduate physical education students who had undergone four training sessions in October 1981. (For a more complete description of the IBM Project sample selection and training procedures see Taylor, 1982).

The Motor Performance Test Battery was re-administered to 238 of the original 246 subjects during an eight week period from October to December 1982. Ten testers, five of whom were testers during the initial assessment, underwent four training sessions in September of 1982 prior to this test administration.

The results of the motor performance assessments were analyzed as follows. Decile distributions for all tasks were generated for each sex and grade level. The performance scores of each child were compared to the appropriate age-sex decile norms that were generated in the IBM-University of Alberta Learning Disabilities Project. An individual

Based on the results of the first test administration, 32 children were categorized as physically awkward. After the second motor performance assessment, 13 of the original 32 children remained in the physically awkward category. These 13 children underwent the following steps in the identification process to determine their inclusion in the final target group.

A revised Gross-Motor Performance Rating Scale (Umansky, 1983, Appendix B) was distributed to the Physical Education teacher of each of the 13 subjects. Upon completion of the rating scale, only those children identified by their teachers as being physically awkward (i.e., they agreed with the statement "This child is physically awkward") were included in the final target group. Following the completion of this identification process, seven physically awkward children were selected for further study. The characteristics of this sample is described in Table I and II.

Procedures

General Characteristics of the Physically Awkward

The general characteristics of the sample under investigation were determined by the IBM-University of Alberta Learning Disabilities Project. Age, sex, inclusion in the reading disabled or control sample, intelligence test scores (six Lorge Thorndike and one WISC-R) and the results of the Harter Perceived Competence Scale (1979), were thus obtained for each of the seven subjects from the Project's files.

TABLE I

SAMPLE CHARACTERISTICS

NAME	AGE	SEX	RD	CONTROL	PREFERRED HAND	I.Q. PERFORMANCE	I.Q. VERBAL	F
Casey	9	M	+		right	100	105	
Fred	10	M	+		left	123	101	
Ingrid	10	F	+		right	98	93	
Shirley	10	F	+		right	87	69	
Tracey	10	F		+	left	102	93	
Warren	11	M		+	right	81	91	
Molly	11	F	+		right	88	93	

* Wisc-R

TABLE II

SAMPLE CHARACTERISTICS

NAME	HEIGHT/cm	WEIGHT/kg	RATIO	PERCENTILE	PERCEIVED COMPETENCE			
					COGNITIVE	SOCIAL	PHYSICAL	GENERA
Casey	136.0	29.5	4.61	60th	3.4	4.0	2.7	2.3*
Fred	143.4	40.5	3.54	20th	2.4*	2.4*	2.3	2.1*
Ingrid	140.5	39.5	3.56	20th	2.0**	1.8**	1.4**	2.1*
Shirley	143.8	36.0	3.99	40th	3.6	3.6	3.1	3.6
Tracey	148.0	47.0	3.15	10th	2.1*	2.6	3.0	2.7
Warren	142.0	38.0	3.74	35th	3.0	2.0*	2.0*	2.7
Molly	140.5	40.0	3.51	30th	2.1*	2.1*	2.1	2.3

*/** denotes approximately one/or two standard deviations below age appropriate means

for preferred handedness during both administrations of the Motor Performance Test Battery. Each child was asked to write his/her name on the record form. The hand used was recorded as the preferred hand. The height in centimeters and weight in kilograms of each subject were measured using the Canada Fitness Awards Protocol (Appendix D) during the second motor performance assessment.

Motor Performance Data

As mentioned previously, the results of both administrations of the Motor Performance Test Battery and the Gross Motor Performance Rating Scale were used in the identification process to determine the physically awkward sample. These motor performance data were also used to further describe the characteristics of each subject.

Parent Interviews

A five page Free Time Leisure Pursuits Questionnaire (Appendix E) was developed in May of 1983 as the format for conducting the parent interviews. A number of the items included in this questionnaire were developed from the parent responses obtained from the Motor Development Clinic for physically awkward children at the University of Alberta. This questionnaire was reviewed by experts in the field (i.e., professors and graduate students in adapted physical education) to ensure that the items included were culturally-normative to Edmonton, Alberta, Canada. The parents of five children completed the questionnaire during a pilot survey. The interviewed parents indicated that the questionnaire with the addition of three items would adequately cover the free time activities in which their children might participate. The three items

activities were added to the appropriate item lists of the questionnaire.

In May 1983, a letter was sent to the parents of each of the seven children included in this study, requesting an interview/appointment to discuss their children's play activities. Specific dates and times for these interviews were confirmed during follow-up telephone contacts. The seven parent interviews were conducted by the investigator in the homes of each of the children in June 1983. Although parent interviews were specifically requested, four of the seven children were at home during the interviews and were called upon by their parents to answer some of the questions.

As mentioned previously the Free Time Leisure Pursuits Questionnaire was used as the format for conducting the interview. Parents were asked to list the outdoor and indoor play activities in which their children had participated during the past year, and to indicate the frequency of this participation. Once this list was exhausted the interviewer suggested the remaining activities included in the Neighbourhood Recreational Activities section of the questionnaire to the parents, who in turn commented on the frequency of their children's participation in the particular items. A systematic questioning technique was used to conduct the last part of the interview.

The results of the Free Time Leisure Pursuits Questionnaire were descriptively analyzed under the following categories: Neighbourhood Recreational Activities which included Neighbourhood Group Outdoor Play Activities, Neighbourhood Individual Outdoor Play Activities, Home Indoor Activities, Social Play Preference in Neighbourhood Play Situations and Community-Sponsored Activities which included Participation

in Camp Situations, Participation in Lessons and Parents' Appreciation of the Problem.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The results of this study will be presented in two major parts. The first section presents group data on the psychometric and physical characteristics of the subjects, their participation in recreational activities within the neighbourhood and in community-sponsored programs, and the parents' appreciation of the problems experienced by their children. The second major section presents the results on an individual basis using the same format and headings. A discussion of these results is included within each section and is followed by a general discussion at the end of the chapter. To ensure confidentiality, the names of the seven physically awkward children included in this study have been changed.

I. GROUP PROFILE

The Group Profile data will be presented under two categories: Subject Characteristics and Free Time Leisure Pursuits Questionnaire. The major heading of Subject Characteristics will include the following sub-headings: Sex Distribution, Birth Rank, Preferred Handedness, Height-Weight Data, Intelligence Test Scores, Incidence of Reading Disability, Harter Perceived Competence Scale, Motor Performance Test Battery, and Motor Performance Rating Scale.

Subject Characteristics: Results and Discussion

Seven children were identified as being physically awkward based on the results of two motor performance assessments, conducted one year apart, and the results of a gross-motor performance teacher rating scale. Three males aged nine, ten and eleven years and four females aged ten and eleven years were included in this group. The I.Q. scores, preferred handedness, height and weight data, and Harter Perceived Competence Scale scores are presented in Tables I and II.

Sex Distribution

While the conclusions derived from this study may further our understanding of the field of physical awkwardness, investigation of such a small sample limits the generalization of the results to other groups of physically awkward children. One of the interesting characteristics of this group of physically awkward children is the relatively equal sex distribution (i.e., 3 males and 4 females). Early research in the field of physical awkwardness has usually been conducted in conjunction with studies of learning disabilities (Brenner et al., 1967; Paine, 1968; Bruininks and Bruininks, 1977). Consequently an assumption was made by a number of researchers that the incidence of awkwardness between the sexes would be the same as found in such studies (i.e., significantly more males than females would be identified as being physically awkward) (Keogh, 1968; Paine, 1968). In contrast to this expectation, more recent studies have indicated that the frequency of awkwardness is the same for males and females (Gubbay, 1975; Taylor, 1982). One explanation for this apparent shift in the sex distribution of the incidence of physical awkwardness is the fact that today girls are expected to be more proficient in physical skills than they have in the past. While

proficiency in gross-motor skills has long been valued, encouraged and assessed in males, this has not always been the case for females (Hall and Richardson, 1982). Parents, teachers, and even researchers have probably observed awkwardness in girls but because their motor proficiency was neither expected nor valued few attempts were made to further examine or to remediate this problem. Today, a number of researchers contend that physically awkward girls have always existed; However, past social expectations limited their identification.

Birth Rank

Few research studies have been conducted which investigate the birth rank of physically awkward children. Gubbay (1975) suggested that a high incidence of physically awkward children were the first born. The seven physically awkward children involved in this study were members of family units which ranged in size from two to four children. Three awkward children were the eldest, three the youngest, and one the middle child.

Preferred Handedness

Another characteristics often associated with physical awkwardness is a higher incidence of ambidexterity, ambilaterality and/or a lack of hand dominance in this population (Walton et al., 1962; Brunt, Magill and Eason, 1983). None of the children in this study exhibited this characteristic; however, two of the seven children were left handed. It would be difficult to attribute any importance to this characteristic. What is interesting to note, however, is the comment made by a father of one of the girls, which attributed her awkwardness to being a left handed female. It was obvious to him that his daughter had difficulty performing gross-motor activities, but, he felt that awkwardness was to be

expected whenever a child had to perform tasks backwards.

Height-Weight Ratio Results

As can be seen from Table II the height/weight ratio percentiles obtained by the seven subjects under investigation were relatively low. With the exception of the one child who was at the 60th percentile, the remaining ratings were at or below the 40th percentile level. Hence, there was a definite tendency for these children to be overweight.

Wall (1982) proposed that physical awkwardness, or the lack of proficiency in culturally-normative skills, was often manifested in the avoidance of physical activity and subsequently in decreased levels of physical fitness. The relationship between obesity and decreased levels of physical fitness has been extensively researched (Clarke, 1979; Ekblom, 1968; Zaichkowsky, Zaichkowsky and Martinek, 1980). Although no specific fitness measures were available for this study it is interesting to note that these children tended to be overweight.

Intelligence Scale Sub-Scores

Research in the field of learning disabilities has documented the existence of specific characteristics, or marker variables, that have the potential to help identify children with learning disabilities (Wright and Michael, 1977; Keogh, Major, Reid, Gandara and Omori, 1980). One such indicator is a large discrepancy between scores obtained on the verbal and performance subscales of certain intelligence tests. A number of researchers have reported that awkward children also display this discrepancy in intelligence test scores (Walton, Ellis and Court, 1962; Brenner et al., 1967; Paine, 1968; Hulme, Smart and Moran, 1982). As can be seen from Table I only one of the seven children examined in this study obtained a performance score which was clearly different from

his verbal score. It would have been expected that the verbal score would be significantly higher than the performance score; however, the observed discrepancy was in the opposite direction. Clearly this small sample of physically awkward children does not fit the above pattern of intelligence test scores.

Incidence of Reading Disability in Physically Awkward Sample

Just as learning disabilities researchers have recognized physical awkwardness or clumsy behaviour as a characteristic frequently exhibited by LD children (Brenner et al., 1967; Paine, 1968), so too have researchers in the field of physical awkwardness recognized a relatively high incidence of learning difficulties, in particular, reading disabilities in physically awkward children (Walton et al., 1962). In 1982, Taylor identified a sample of physically awkward children which was comprised of twice as many reading disabled as non-reading disabled children. As can be seen in Table I, five of the seven children in this study were identified as having concomitant reading difficulties. Even with the small sample, the expected ratio of reading disabled to non-disabled children was found in this study.

Harter Perceived Competence Scale Results

As reported in Table II, the results obtained by the seven children in this study, on the Harter Perceived Competence Scale, do not appear to follow any significant trends. It was expected that children suffering from the syndrome of physical awkwardness would be extrinsically motivated, highly dependent on external approval and feedback, and perceive themselves as being less competent than their peers (Harter, 1979).

The results on the Harter Perceived Competence Scale indicate that Ingrid was the only child who scored well below the mean (almost two standard deviations) on all four subscales. Warren was the only other child who obtained a score on the physical subscale which was a standard deviation below the mean. It was expected that physically awkward children would score well below the mean on this particular item, indicating a personal awareness of their motor difficulties. Instead, their scores reflect a general feeling of competence in the play activities presented on this scale. The items included in the physical subscale deal specifically with play situations (which may be regarded as being relatively juvenile in nature [see Harter Scale Appendix C] and are unrelated to culturally-normative motor skills. The results of the free time leisure pursuits questionnaire, presented later in this chapter, indicate that these children participate in relatively few physical activities of any kind. Consequently, the Harter results are both surprising and suspect. It would seem that more items are required on the physical competency subscale in order to accurately measure the perceptions of the children.

Motor Performance Test Battery

Table III contains the percentile scores obtained by each subject during both administrations of the Motor Performance Test Battery. It is not surprising that the scores on most of the items were very low, as the criterion for inclusion in the group was three scores at or below the tenth percentile. These children performed very poorly across the six motor tasks; furthermore, as one would expect with unskilled subjects, considerable variation in performance was found within and between the two test administrations. Marked increases and decreases in performance on various items (k.e., a discrepancy of 30 percentile points or more)

TABLE III

MOTOR PERFORMANCE TEST BATTERY
PERCENTILE SCORES
YEARS 1 AND 2

Name	Age	Test Year	Wall Throw	Throw, Clap and Catch	Dodge Run	Stork Balance Right Foot	Stork Balance Left Foot	Wide Board Balance Right Foot	Wide Board Balance Left Foot	Controlled Jump Right Foot	Controlled Jump Left Foot
Casey	9	1	0.0*	4.5*	9.1*	0.0*	11.4			0.0*	0.0*
		2	0.0*	6.8*	6.8*	0.0*	6.8*			0.0*	0.0*
Fred	10	1	22.5	7.5*	5.0*	12.5	20.0	47.5	2.5*	15.0	17.5
		2	7.5*	5.0*	30.0	35.0	42.5	17.5	7.5*	0.0*	0.0*
Ingrid	10	1	7.7*	28.2	53.8	5.1*	7.7*	25.6	15.4	0.0*	0.0*
		2	5.1*	7.7*	43.6	0.0*	5.1*	5.1*	12.8	30.8	0.0*
Shirley	10	1	64.1	28.2	53.8	10.3*	48.7	10.3*	2.6*	79.5	0.0*
		2	71.8	7.7*	87.2	5.1*	33.3	0.0*	0.0*	59.0	0.0*
Tracey	10	1	69.2	28.2	30.8	0.0*	2.6*	56.4	10.3*	25.6	0.0*
		2	41.0	7.7*	0.0*	15.4	10.3*	38.5	15.4	30.8	0.0*
Warren	11	1	0.0*	0.0*	0.0*	0.0*	2.4*	0.0*	9.8*	0.0*	26.8
		2	0.0*	0.0*	2.4*	0.0*	46.3	2.4*	9.8*	0.0*	0.0*
Molly	11	1	10.8*	2.7*	67.6	0.0*	16.2	5.4*	59.5	0.0*	13.5
		2	5.4*	0.0*	24.3	0.0*	0.0*	2.7*	8.1*	24.3	19.8*

* scores at or below the 10th percentile

were noted for six of the seven subjects. The item that all of the children had the most difficulty performing was the controlled jump. The other item which consistently differentiated these children from their non-awkward peers was the throw, clap, and catch.

Motor Performance Rating Scale

The ratings given to each subject on the Motor Performance Rating Scale are presented in Table IV. Umansky's (1983) study determined that teachers could effectively identify physically awkward children by completing a motor performance rating scale. While this Motor Performance Rating Scale was used primarily in the identification process of this study, it is interesting to note that all seven subjects received teacher ratings below Umansky's mean score ratings for physically awkward children. This is further evidence that the sample under investigation is a truly physically awkward one.

A modified version of Umansky's rating scale which included all of the items from her three scales (i.e., 6-7 years, 8-9 years and 10-11 years) was used in this study. Even with this large range of tasks, four of the children were rated as not being able to perform any of the tasks well.

Wall (1985) has described response-loaded tasks as those which emphasize the control of the kinematic pattern (walking, jumping, running, swimming), perceptually-loaded tasks as those which emphasize perceiving the object to be acted upon (bouncing, catching and kicking a ball), and cognitively-loaded tasks as those which focus on the decisions required prior to executing an action (making a double play, intercepting a pass). When the items on the Motor Performance Rating Scale were analyzed using the above continuum of task demands four items

TABLE IV

MOTOR PERFORMANCE RATING SCALE RESULTS

	Age Appropriate Rating Scale	Percentage Score	Mean Percentage Score for Physically Awkward Umansky
Casey	8-9	30	48
Ingrid	10-11	46	52
Fred	10-11	41	52
Shirley	10-11	47	52
Tracey	10-11	52	52
Warren	10-11	51	52
Molly	10-11	41	52

expected the six children in this age group received their lowest ratings on these four ball skill items.

None of the sixteen items included in the rating scale for 8-9 year olds were highly cognitively-loaded. Even so, Casey's teacher rated him as performing very poorly on ten of the perceptually and response-loaded items.

Summary of Subject Characteristics

This small sample of physically awkward children was comprised of relatively equal numbers of males and females, five of whom were reading disabled. An analysis of their respective birth ranks did not result in the recognition of any significant trends. Although two of the children were left handed, none demonstrated any hand dominance problems such as ambidexterity or ambilaterality. Six of the children received height-weight percentile ratings which indicated a tendency towards them being overweight. Although their intelligence test scores were in the low normal range, none of the children had the expected verbal-performance score discrepancy. Generally, the perceived competency results indicate that these children did not have the expected feelings of incompetence in the motor domain. Based on the results of the two motor performance assessment tools, it is clear that the seven children in this study definitely lacked proficiency in performing motor skills. Generally, their performance on the item presented in the Motor Performance Test Battery was very poor. Furthermore, their teachers, after using the Motor Performance Rating Scale, recognized their motor difficulties and were able to identify the culturally-normative activities which differentiated this group from their non-awkward peers.

Discussion of the Subject Characteristics of the Group Profile

For the most part, the seven children included in this study did not share a number of the psychometric characteristics which would identify them as being physically awkward. The expected marker variables reported by a number of researchers (Walton et al., 1962; Gubbay, 1975; Keogh, 1978) of undeveloped hand dominance, significant discrepancies between verbal and performance intelligence test sub-scale scores, and feelings of incompetence in performing motor activities were not reflected in the scores obtained by this small group of children.

Henderson and Hall (1982) suggest that in general physically awkward children are a heterogeneous population, who display a wide range of characteristics. Consequently, they propose that the definition of a syndrome of behaviours which includes clumsiness, social difficulties, speech delay and motor impairment would be too diverse to be of any benefit to professionals. The results of the group subject characteristics may lend support to this argument, since few common variables were determined to affect this small sample. Researchers who have reported the significance of marker variables in the identification of physical awkwardness also emphasize the heterogeneous nature of this developmental disability and suggest that all children do not display all of the expected psychometric characteristics. It is beyond the scope of this study to determine whether the marker variables reported in the literature would be factors in larger samples of physically awkward children.

A tendency for these children to be overweight was illustrated by the relatively low percentile scores obtained by six of the seven children

on the Canada Fitness Awards height/weight ratio norms. A cyclical relationship exists between the occurrence of obesity and decreased performance in physical activities. Since children who are overweight have difficulty performing motor tasks which require agility and endurance, they frequently withdraw from these unsuccessful activity situations. Consequently the avoidance of motor tasks may result in decreased levels of fitness and further weight gain (Wall, 1982, 1985). Again it was not the purpose of this study to determine whether the children involved were awkward as a result of being overweight or whether their relatively sedentary lifestyles which were a function of their lack of proficiency in motor skills resulted in their lower than normal height/weight ratio percentile scores. Based on the results of the Free Time Leisure Pursuits Questionnaire it would seem that both of these factors had the potential to affect the physical activities performed by these children.

Another characteristic which did distinguish these children from the other participants of the IBM-University of Alberta, Learning Disabilities Project was their extremely low percentile scores obtained on the Motor Performance Test Battery. As presented in Table III, these children definitely had difficulty performing all six of the gross-motor tasks included in the battery and they all demonstrated relatively high degrees of performance variability both within and between the two test administrations. Again these same behaviours have been reported by a number of previous researchers (Brenner et al., 1967; Paine, 1968; Brunt et al., 1983).

The results of the Motor Performance Rating Scale are clearly congruent with the motor performance results. As reported by Sugden (1972), Gubbay (1975), Henderson and Hall (1972) and Umansky (1983), teachers were capable of identifying physically awkward children within

their classes; however, for the most part they were reluctant to do so. As might have been expected, the teachers were unwilling to refer children for professional evaluation of their motor skills when they themselves were unfamiliar with the procedures which would be involved in such an assessment. It was interesting to note that the teachers in this study were unaware of the new programs offered by the Motor Development Clinic at the University of Alberta. Consequently, they did not realize the possibilities for remedial help that a motor performance assessment would offer to the physically awkward children in their classes.

Free Time Leisure Pursuits Questionnaire

The results of the Free Time Leisure Pursuits Questionnaire, which was completed during the parent interviews will be presented under two major categories: Neighbourhood Recreational Activities and Community-Sponsored Activities. The activities presented in the first category are further divided into Neighbourhood Group Outdoor Play Activities, Neighbourhood Individual Outdoor Play Activities, Home Indoor Activities, and Social Play Preference in Neighbourhood Play Situations. The second category presents the following information: Participation in Social Organizations, Participation in Minor Sports Leagues, Participation in Camp Situations, Participation in Lessons and the Parents' Appreciation of the Problem.

Neighbourhood Recreational Activities

Neighbourhood Group Outdoor Play Activities

Researchers suggest that physically awkward children, due to their lack of skill, tend to become involved in individual rather than group

physical activities (McKinlay, 1978; Whiting, Clarke and Morris, 1969). They hypothesize that the addition of spatial and temporal task demands which are usually found in group activities make the demands of the situation such that these children cannot cope with them. Thus, their inability to successfully meet the skill demands of such culturally-normative team activities as soccer, hockey, and baseball often lead to feelings of failure and frustration on the part of these children (Arnheim and Sinclair, 1979; Wall and Taylor, 1983). With this in mind, the six group activities presented in the questionnaire might be viewed as lying on a continuum from relatively low to high spatial-temporal task demands (i.e., games of low organization such as snowball fights, tag, and hide and seek activities, to the sports of softball, soccer, road hockey and ice hockey).

As presented in Table V, six of the seven physically awkward children under investigation clearly demonstrated a tendency to avoid the free time leisure pursuits included in the questionnaire. Four of the physically awkward children apparently preferred to participate in games of low organization; confirming our expectations in this regard. These children seemed to realize that they would be more successful in activities that were relatively low in spatial and temporal task demands.

Fred seemed to be an exception to this trend. His parents reported that he spent a great deal of time playing softball, soccer, road and ice hockey rather than the expected activities of low organization; however, given his teachers' ratings and motor performance scores, his parents' perceptions may not accurately reflect the situation.

Neighbourhood Individual Outdoor Play Activities

Ten items were included in the individual activities portion of the

TABLE V

GROUP RESULTS OF FREE TIME LEISURE PURSUITS QUESTIONNAIRE

Frequency of Participation in Neighbourhood Recreational Activities

Type of Activity	Activity	Frequency	
		Never or Rarely	Sometimes or Frequently
Outdoor: Group	Play games, hide and seek, tag	4	3
	Play softball	5	2
	Play ice hockey	5	2
	Play road hockey	5	2
	Have snowball fights	3	4
	Play soccer	3	4
Outdoor: Individual	Climb playground equipment	3	4
	Play with balls	5	2
	Skateboard	7	0
	X-country ski	6	1
	Ride a 2 wheel bike	2	5
	Climb trees	7	0
	Rollerskate	5	2
	Skip	3	4
	Watch games	5	2
	Build snowmen	5	2
	Slide on ice	4	3
	Toboggan	4	3
	Play on swings	3	4
Indoor	Play cards	5	2
	Play board games	4	3
	Play with dolls	5	2
	Play with cars	6	1
	Play floor hockey	6	1
	Play video games	3	4
	Gymnastics	3	4
	Watch television	0	7

Free Time Leisure Pursuits Questionnaire. As would be expected, all of the physically awkward children participated regularly in at least one of the individual activities; however, five of them showed no interest in at least half of the activities presented.

The individual activities in which these physically awkward children most often participated were biking, ice skating and swimming.

Although all of the subjects demonstrated an interest in at least three of the individual activities, their lack of skillfulness seemed to severely limit the repertoire of individual activities in which they could successfully participate. Consequently, their opportunity to develop motor skills within individual play situations was also limited.

Five items, which can be classified as requiring minimal physical skill were included in this section. Although such low skill activities as building snowmen, playing on swings, and sliding on ice patches were considered to be culturally-normative by the experts who reviewed the questionnaire and by the parents who completed it during the pilot survey, it was also indicated that they were not age-appropriate for these children. Even so, three of the seven children in this study regularly pursued three or more of these activities. Fred was the only child whose parents reported that he was not interested in any of these activities.

Home Indoor Activities

The children under investigation pursued relatively few of the activities presented in the indoor activity portion of the questionnaire. It is interesting to note that five of the parents indicated that the activity in which their children most often participated was watching television. The remaining two parents reported that their children

frequently watched television; however, this activity was second to playing in general.

Six of the seven families interviewed, owned home video games, thus it was not surprising that four of the children spent time involved with these games.

Social Play Preference in Neighbourhood Play Situations

When asked to describe their children's friends, six of the seven parents commented that in the past, their children usually chose younger playmates. Molly's and Fred's parents commented that this trend had changed within the previous year, resulting in each of them having playmates of their same age. Three of the parents reported that their children had no after school playmates who were not relatives. McKinlay (1978) suggested that difficulty in making and keeping friends is a characteristic of physically awkward children. This tendency is certainly reflected in the small sample of physically awkward children described in this study.

Summary of Neighbourhood Recreational Activities

The results of the Free Time Leisure Pursuits Questionnaire indicate that most of these children do not participate in team sport activities, they choose individual as opposed to group physical activities. When they do select group activities these are generally of low spatial-temporal task demands and usually are activities more frequently performed by younger children. They have a very sedentary lifestyle which involves a great deal of time watching television.

Community-Sponsored Activities

Opportunities for children to participate in organized extra curricular activities exist in most urban communities. Church groups, community leagues and private clubs are only a few of the organizations which offer a wide range of social, physical and recreational activities for elementary school age children. Although costs for such programs vary a great deal, most community-based programs are accessible. Hence, participation in such activities is usually not limited by financial considerations. As expected, the results of the parent interview indicated that the physically awkward children in this study participated in relatively few of these programs.

Participation in Social Organizations

Programs for boys and girls, such as Scouting and Guiding have developed an international reputation by providing children with the opportunity to develop social, physical and life skills within a challenging environment. Casey and Molly were the only two physically awkward children who had ever belonged to programs like these. The fact that Casey had spent three years in Cub Scouts indicates that this might have been a relatively enjoyable experience for him. Molly, on the other hand, attended Brownies for only one year. Her father suggested that her disinterest in this activity stemmed from the fact that she did not have a mother figure at home to help her with her projects.

Boys and girls clubs were organized in each of the Edmonton communities in which the physically awkward children lived. Clearly the opportunity existed for all seven children to participate in a social organization of this type. Unfortunately, very few of them made use of these opportunities.

Participation in Minor Sports

In Canada, a number of associations organize competitive sport opportunities for chidren. The goal of these organizations is to promote both skill development and mass participation in sports, such as soccer, softball, hockey and ringette. Although the opportunity for participation in this type of activity was available to all seven physically awkward children only two had ever played on a team. Shirley and Molly both participated in their local minor soccer leagues. Shirley played for only one season before quitting while Molly had been participating for the last three years.

Historically, more minor sport opportunities have been available to boys than to girls (Hall and Richardson, 1982). Although some positive changes have occurred recently, boys still have more opportunities to participate than girls. Even with this difference, none of the physically awkward boys had ever experienced a competitive team sport situation.

Participation in Camp Situations

A number of summer camps are available to chidren in the Edmonton area. Youth organizations such as the Y.M.C.A., church groups, private organizations and local parks and recreation departments offer camping experiences which range from spending two weeks tenting to one week day camps. The common denominator of most camping experiences is an emphasis on physical activity. While some camps are designed to promote physical skill development, for example, horseback riding and hockey camps, others provide a fun environment by offering a challenging selection of games and physical activities. Even with these opportunities being readily available, Casey was the only child who had ever participated in a camp experience. He had attended a two week racquetball camp the

previous summer. Although his father was unaware of the exact activities in which Casey had participated, he was planning to re-enroll him in the upcoming camp. The fact that he would select racquetball as the camp activity in which he would enrol Casey suggests that, like many parents, Casey's father did not appreciate the skill required to meet the task demands of various activities.

At the time of the parent interview, Warren was about to begin his first one week computer camp experience. His mother indicated that she was sending him to this type of camp to encourage him to make more friends and to develop an interest in this activity.

Although the costs of camps vary a great deal, most community-based day camps charge reasonable fees. Day camps fulfill a further role by supplementing day care programs. Even with the variability of these camp experiences, the majority of physically awkward children under investigation had never experienced a camp situation.

Participation in Lessons

In nearly every community, organizations and private individuals offer group and individual lessons in a wide variety of activities, such as ice skating, piano playing, and ceramics. Lessons are designed to promote personal skill development, consequently fees vary depending upon the level of skill acquisition. Collectively, the seven physically awkward children had at one time been enrolled in the following lessons: ice skating, swimming, gymnastics, dance, accordian, piano, organ and ceramics. Although all of the children under investigation had been enrolled in at least one lesson situation, it is interesting to note the number of these activities which were no longer pursued. All three of the children who had taken dance lessons, two of the three

who had taken music lessons, one of the three who had taken ice skating, the one child who had participated in gymnastics and one of the two children who had taken ceramics had quit these lessons. Five of the seven children had been enrolled in swimming lessons and all were continuing this endeavour even though two of the children were repeating their previous badges. Perhaps, the fact that swimming is a survival skill that is taught in a well-sequenced progression might account for these children continuing in this program.

Summary of Community Sponsored Activities

This group of physically awkward children had participated in relatively few community sponsored activities. Two children had participated in Boys and Girls Clubs, two had played on a minor sports team, and only one had attended a camp. Although all had been enrolled in at least one lesson situation, six of the seven children had quit at least one of these activities. The most obvious result obtained from this portion of the questionnaire is the relatively large number of activities which these children no longer performed. Again, this would be an expected outcome of unsuccessful physical activity experiences.

Parents' Appreciation of the Problem

Both Brenner et al. (1967) and Gubbay (1975) indicated that the parents involved in their studies, were aware of the motor difficulties exhibited by their children. As expected, three of the parents interviewed in this study recognized that their children had gross-motor difficulties. It is interesting to note that each of these parents attributed their child's awkwardness to specific factors. Ingrid's father realized that his protectiveness might have resulted in her not having had the opportunity to develop a suitable repertoire of physical

skills. Tracey's father attributed her awkwardness to her being left handed, and Warren's mother recognized that his lack of playmates resulted in him having little opportunity to perform gross-motor activities. Unfortunately, none of these parents decided to enrol their children in the University of Alberta's Motor Development Clinic. The remaining four parents were not convinced that their children had any serious motor difficulties.

Discussion of the Group Results of the Free Time Leisure Pursuits Questionnaire

The results obtained from the Free Time Leisure Pursuits Questionnaire which was completed during the parent interview, indicate that as predicted by Wall (1982), the motor proficiency of these children did in fact limit both the type and frequency of physical activities in which they participated. Parents reported that for the most part, their children were not interested in most of the physical activities included in the questionnaire. They more frequently chose to participate in individual rather than group activities. Furthermore, the few group activities which were enjoyed by these children tended to be games of low organization as opposed to more complex team sport activities. Generally, these children preferred to spend their time watching television rather than performing culturally-normative physical activities. This apparent avoidance of physical activity and the relatively sedentary lifestyle that comes with it has been reported elsewhere for physically awkward children (Wall, 1982; Abbie et al., 1978; McKinlay, 1978; Symes, 1972). It is not surprising that physically awkward children would withdraw from such activities after experiencing failure in them. As expected, these children chose to

awkward children exclude them from play activities (Whiting et al., 1969; Arnheim and Sinclair, 1978; McKinlay, 1978). Thus the preference for individual activities determined in this study may have been a result of both their own and their peers decisions regarding their ability to perform group activities. Furthermore, it would be expected that individual activities would be less inhibiting to awkward children since peer pressure could be avoided in these activities.

Similarly, the seven children in this study had very few after school playmates (Brenner et al. 1967; McKinlay, 1978). The friendships which they did develop, usually involved children younger than themselves. Again, this is not surprising, considering that the physical activities which they enjoyed tended to be rather juvenile ones. Furthermore, it would be expected that their peers would be bored with the relatively few activities in which these awkward children were interested.

McKinlay (1978) has suggested that a further consequence of awkward children's ineptness in games and their difficulty in making and keeping friends is a lack of self-confidence which results in avoidance of activities which are well within their skill repertoire. Although it was not within the scope of this study to determine the reasons why these children avoided certain activities McKinlay's explanation appears to be a tenable one.

This group of physically awkward children had participated in relatively few community-sponsored activities. Collectively, they had participated in twenty-four separate programs; however, by the time of the parent interview, they were no longer involved in twelve of them.

Brenner et al. (1967) were one of the first to suggest that the interests and hobbies of physically awkward children were different from those of their non-awkward peers. The results of this study did not indicate that the awkward children had different interests; however, they were definitely more limited than would have been expected of non-awkward children.

As mentioned previously, behavioural and emotional problems have been repeatedly recognized in physically awkward children (Illingworth, 1969; Brenner et al., 1967; Arnheim and Sinclair, 1979). Surprisingly, no indications were given to suggest that these problems had been manifested in the physically awkward children included in this study. It would be expected, however, that without swift and direct motor remediation, all seven of these children have the potential to develop the concomitant emotional and behavioural problems, such as truancy, aggressiveness, and decreased levels of self-confidence, which have been cited in the literature (Gubbay, 1975; Dare and Gordon, 1970; McKinlay, 1978; Reuban and Bakwin, 1968; Henderson and Hall, 1982).

II. INDIVIDUAL PROFILES OF THE SEVEN PHYSICALLY AWKWARD CHILDREN

Presented in the following section are case studies or profiles of the seven physically awkward children included in this study. This information is also organized under the major headings of Subject Characteristics and Free Time Leisure Pursuits Questionnaire. Subject Characteristics include the information relating to age, sex, birth rank, preferred handedness, height/weight ratios, intelligence test scores, incidence of reading disability, perceived competency scores,

Scale scores. Included under the Free Time Leisure Pursuits Questio category is information regarding Neighbourhood Recreational Activit and Community-Sponsored Activites.

Subject #1: Casey

Subject Characteristics

Casey was the youngest member of the sample. At the time of th second gross-motor assessment this nine year old, right handed boy w receiving remediation for his reading disability in a Resource Room. As Presented in Tables I and II, he obtained scores of 100 on the performance, 105 on the verbal, and 102 on the full scale elements o the Wechsler Intelligence Scale for Children, Revised. Casey obtain scores on the Harter Perceived Competence Scale (1979) of 3.4 on the Cognitive, 4.0 on the Social, 2.7 on the Physical and 2.3 on the General subscales. His physical stature as determined by the Canada Fitness Award, height/weight ratio norms placed him in the 60th percentile for his age and sex category. Casey was the eldest of the three male children.

Motor Performance Test Battery

Casey obtained extremely low test results during both administra tions of the motor performance test battery (Table III). He scored at the 0 percentile range on the Wall Throw, the Stork Balance (right fo and the Controlled Jump (both feet), during both test sessions. His scores in the Throw and Catch and Dodge Run items were below the 10th centile for his age and sex in both test administrations. His only sc ove the 10th percentile was obtained on the Stork Balance (left foot ring the first test administration; however, this score decreased fr

Gross Motor Performance Rating Scale

Casey received a score of 30% on the Gross Motor Performance Rating Scale for eight and nine year olds (Umansky, 1983, Appendix B). Of the sixteen items presented in the checklist his teacher indicated that he performed poorly or very poorly in the fourteen activities which she had observed. She predicted that he would perform adequately on the remaining two items, those being "Can ice skate a distance of 25 metres" and "Can touch a tether ball as it moves around the pole". Furthermore, she identified him as being physically awkward and agreed that he should be referred for professional evaluation of his gross-motor skills. In addition she commented: "His performance is very poor. He seems to move in slow motion at all times. In action songs and dances he is always behind a beat or two."

Free Time Leisure Pursuits Questionnaire

The results of Casey's Free Time Leisure Pursuits Questionnaire are presented in Table VI.

Neighbourhood Recreational Activities

Whenever Casey took part in group activities he preferred playing games of low organization although he sometimes played soccer and road hockey with his younger brothers. He enjoyed the individual activities of biking, roller skating and playing on playground equipment but he did not practise ball skills on his own. Casey enjoyed tobogganing and sliding on ice patches but was not interested in the other low skill items included in the questionnaire. He was the only child in the study whose favourite indoor activity was playing with cars. He was

TABLE VI

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #1: Casey

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group		softball ice hockey	soccer road hockey	snowball fights tag and hide and seek type games
Individual	balls skip skateboard	climb trees X-country ski	swim ice skates	bike rollerskate playground equipment
Low Skill	watch games	build snowmen play on swings		slide on ice toboggan
Indoor	dolls floor hockey	board games	cards video games gymnastics	cars

also interested in playing cards, video games and performing gyminastics activities. His father reported that he often watched television and read books. Although Casey usually played with other children, his father reported that they tended to be younger than himself.

Community-Sponsored Activities

At the time of the Parent Interview, Casey had been a Cub Scout for three years and had earned a number of badges. In the past he had attended Sunday School and had taken ice skating, gymnastics and accordian lessons. His father did not foresee him pursuing any of these activities again. He had taken swimming lessons for two summers and at the time of the interview was enrolled in the 1983 summer program, at which time he would repeat his second badge. He had never played on a minor sports team nor had he ever attended a special physical activity program. During July of 1982 he had participated in a racquetball day camp. This was his only camp experience to date.

General Comments

Casey learned to walk at a later date than did his two brothers. At the age of four years he fell off a chair and broke his left elbow. Prior to the interview, Casey's classroom teacher had spoken with his father concerning Casey's apparent difficulty in pitching a ball. As a result of this discussion his father recognized this one motor problem. Generally, however, he did not feel that his son had any other motor difficulties. In fact Casey had recently told him that he was the fastest member of his relay team.

Discussion

Based on the results of both the Motor Performance Test Battery and the Motor Performance Rating Scale, Casey was the most severely affected physically awkward child included in this study. On the Free Time Leisure Pursuits Questionnaire it was indicated that he participated in activities which were usually performed by younger children. This is not a surprising fact, since his father reported that his usual playmates were his younger brothers and their friends. Casey had withdrawn from three types of lessons. Although specific reasons for the termination of his involvement in these programs was not given, the motor problems which were evident in his two motor assessments would suggest that he would not be very successful in these endeavours. His participation in Cub Scouts indicates that he is able to cope in this environment. Studies conducted by Reuben and Bakwin (1968), Dare and Gordon (1970), and Henderson and Hall (1982) suggest that emotional and/or behavioural problems are consequences of physical awkwardness which usually result in further social difficulties. The antecdote presented during the interview, which referred to an accident where Casey fell off a chair and broke his arm, was the only statement made by any parent which clearly indicated awkward behaviour.

Subject #2: Ingrid

Subject Characteristics

Ten year old Ingrid was initially placed in the control sample of the IBM-University of Alberta Learning Disabilities Project. At the time of the parent interview it was discovered that she was in fact receiving reading remediation in her school resource room. She was assessed using the Lorge-Thorndike Intelligence Test, as having scores

of 98 on the performance and 93 on the verbal sub-test scales. On the Harter Perceived Competence Scale (1979) Ingrid scored 2.0 on the Cognitive, 1.8 on the Social, 1.4 on the Physical and 2.1 on the General subscales. She demonstrated a preference for right handedness and was assessed as being in the 10th percentile for her age and sex on the height/weight ratio norms published by the Canada Fitness Award Program. Ingrid was the eldest of three children, one male and two females.

Motor Performance Test Battery

During the first administration of the Motor Performance Test Battery, Ingrid scored below the 10th percentile on the Wall Throw, Stork Balance (both feet), and the Controlled Jump (Both feet). Her highest score in the remaining three items, Throw and Catch, Dodge Run and Wide Board Balance was at the 53rd percentile in the Dodge Run. During the second test administration her performance scores decreased. She obtained scores below the 10th percentile on all of the items except the Dodge Run. Her Dodge Run score decreased to the 43rd percentile.

Gross-Motor Performance Rating Scale

On the Gross-Motor Performance Rating Scale for 10 and 11 year olds, Ingrid obtained a score of 46%. Her teacher indicated that her performance on the seventeen items included in the rating scale were as follows: "very poorly" on one item, that being "Can ice skate a distance of 25 metres", "poorly" on 10 items, four of these being the highly cognitively-loaded tasks, and "adequately" on the remaining six items. Her teacher agreed that she was physically awkward, but did not believe that a referral for professional evaluation of her gross-motor skills would be followed up by her parents. She did comment, however, that in general, Ingrid's motor performance was 'poor'.

Free Time Leisure Pursuits Questionnaire

Table VII includes Ingrid's results for the activity groupings on the Leisure Pursuits Questionnaire.

Neighbourhood Recreational Activities

Ingrid did not often participate in group activities but when she did she preferred playing the games of low organization. Special weekend family outings allowed her to participate in group activities such as softball and soccer. Her parents reported that when alone she enjoyed playing with balls but she did not often participate in the more culturally-normative individual activities like swimming, biking and ice skating. Because Ingrid was not allowed to leave her yard unless accompanied by an adult, she was not given many opportunities to perform the low skill items included in the questionnaire. While indoors she played the piano, watched television and read. Her father reported that the only other indoor activity in which she ever participated was playing cards. When asked to describe Ingrid's social play preferences in neighbourhood play situations her father explained that their extended Italian family ensured that she played with other children, namely her younger cousins and siblings.

Community-Sponsored Activities

Ingrid had never belonged to a social group such as Brownies, nor had she ever taken lessons for a physical activity (e.g., swimming). At the time of the interview she had taken piano lessons for three years and was enrolled in the Royal Conservatory Grade 2 program. She had never been a member of a minor sports team, nor had she attended any form of camp or special physical activity program.

TABLE VII

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #2: Ingrid

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	road hockey	softball soccer ice hockey	snowball fights tag, hide and seek games	
Individual	climb trees playground equipment rollerskate swim X-country ski	bike	skip ice skates	balls
Low Skill	toboggan build snowmen		play on swings watch games slide on ice	
Indoor	board games dolls cars floor hockey video games gymnastics		cards	

General Comments

Ingrid's aunt was present during the interview to avoid any English/Italian translation problems. She left when it became apparent that Ingrid and her father could understand all of the questions.

Her father was not surprised by the suggestion that his daughter demonstrated gross-motor difficulties. He reported that he did not allow her to leave their small backyard without being accompanied by an adult. As a result of this she rarely rode her ten speed bike and never played with school friends on playground equipment. Her father was very concerned for her safety, fearing "crazy drivers".

When asked how she felt about her physical performance, Ingrid commented that she was "not very good at sports". She also said that she would not like to attend the Motor Development Clinic because the other kids would be better than she.

Discussion

The results of the two different motor assessments indicated that Ingrid was truly a physically awkward child. During the parent interview it became apparent that she performed very few of the physical activities included in the Free Time Leisure Pursuits Questionnaire. The only community-sponsored program in which she had ever participated was piano lessons. In comparison to the other six children in this study, Ingrid had had the least opportunity to develop a comprehensive motor skills repertoire. Consequently, the question arises as to the underlying cause of her motor difficulties. Wall (1982) has suggested that the lack of practise of motor skills results in larger discrepancies between awkward and non-awkward children. In Ingrid's case, her lack of experience in most motor skills may have been a major reason for

her lack of skill.

Subject #3: Fred

Subject Characteristics

Fred was a member of the reading disabled sample of the IBM-University of Alberta, Learning Disabilities Project. On the Lorge Thorndike Intelligence Test he obtained scores of 123 on the performance and 101 on the verbal subtest scales. On the Harter Perceived Competence Scale (1979), Fred obtained scores of 2.4 on the Cognitive, 2.4 on the Social, 2.3 on the Physical and 2.1 on the General subscales. He was left handed. His height/weight ratio when compared to the Canada Fitness Award norms placed him at the 20th percentile for his sex and age. Fred was the youngest of two children, one male and one female.

Motor Performance Test Battery

During the initial Motor Performance assessment, Fred obtained scores below the 10th percentile on the Throw and Catch, Dodge Run, and Wide Board Balance (left foot) items. He scored below the 25th percentile on the remaining items with the exception of a 48th percentile rating on the Wide Board Balance (right foot). In general he obtained lower scores on the second Motor Performance assessment, scoring below the 20th percentile on all items except the Dodge Run and Stork Balance.

Gross-Motor Performance Rating Scale

Fred was assessed as having a score of 41% on his age appropriate Motor Performance Rating Scale. The mean score obtained by ten and eleven year old physically awkward children, as determined by Umansky (1983) was 52%. During the course of the year, Fred's physical education teacher had observed only seven of the seventeen items included in

the rating scale. She indicated that he performed adequately in these seven activities and she predicted that his performance in nine of the remaining ten items would also be at the adequate level. On the item "Can catch a fly ball outside the diamond area in a game of softball" she predicted that Fred would perform poorly at this task. Despite these results, his teacher agreed that he was physically awkward. She also agreed that he should be referred for professional evaluation of his gross motor skills, "if any benefit could be derived from this observation." She further commented that "he could perform with his classmates, although it was obvious at times that he was not as coordinated as most of the class."

Free Time Leisure Pursuits Questionnaire

The results of Fred's Free Time Leisure Pursuits Questionnaire are presented in Table VIII.

Neighbourhood Recreational Activities

Fred was the only child examined who often participated in the culturally-normative group games which were high in spatial and temporal task demands. He liked participating in ice skating, swimming and bike riding. Fred was disinterested in all of the low skill and indoor items included in the questionnaire. Surprisingly he never played the video games which were available in his home. His parents reported that he never read books but watched television constantly. Furthermore, they commented that in the past Fred stayed indoors and watched television all of the time. However, at the time of the interview, he was usually playing outside with the neighbourhood children.

TABLE VIII

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #3: Fred

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	tag games	snowball fights		softball soccer road hockey ice hockey
Individual	balls skateboard X-country ski	climb trees skip rollerskate	playground equipment	bike ice skate swim
Low Skill	watch games build snowmen slide on ice	play on swings toboggan		
Indoor	cards board games dolls cars floor hockey video games gymnastics			

nor had he ever taken lessons in a physical activity. He participated in ceramic lessons in 1982/83, but at the time of the interview, did not plan to continue this activity. He had never played on a minor sports team, nor had he ever attended any type of a camp or special physical activity program.

General Comments

Fred's sister and both of his parents were present with him during the interview. This was necessary since the two children had to assist their parents by translating a number of the questions into French. Neither of his parents felt that Fred had any serious motor performance difficulties.

Discussion

Both Fred's performance test scores and his teacher's rating of his motor performance indicated that he had motor difficulties. It was somewhat surprising then, for his parents to report that he frequently participated in the group activities which were high in spatial and temporal task demands. They also reported that in the past, he had preferred to remain indoors watching television. An expected consequence of this type of behavior would be limited opportunities to develop the motor skills necessary for team sport activities. Furthermore, the only community-sponsored activity in which Fred had ever participated was ceramics lessons. How then was he able to succeed in group play situations? No measures were taken in this study to confirm or reject the statements given by the parents. The response given by Fred's parents would indicate that they were unaware of his motor difficulties.

Subject #4: Shirley

Subject Characteristics

Ten year old Shirley was a participant in the IBM-University of Alberta, Learning Disabilities Project as a member of the reading disabled sample. On the Lorge Thorndike Intelligence Test, she obtained scores of 87 on the performance and 69 on the verbal subtest scales. Shirley obtained scores on the Harter Perceived Competence Scale of 3.6 on the Cognitive, 3.6 on the Social, 3.1 on the Physical and 3.6 on the General subscales. She demonstrated a preference for right handedness and her height/weight ratio when compared to the Canada Fitness Award norms placed her in the 40th percentile for her age and sex. Shirley was the eldest of two children, one male and one female.

Motor Performance Test Battery

In general, Shirley's motor performance was quite poor and in fact, her assessment results decreased from three scores below the 10th percentile during the first test administration to four scores below the 10th percentile in the second. She apparently had the most difficulty performing the balancing tasks on her left foot. As presented in Table III she received percentile scores of over 50 on the stork balance (right foot) and the controlled jump (right foot) on both test administrations. Her performance results on the left foot of these tasks, however was below the 20th percentile.

Shirley obtained a score of 47% on the Gross-Motor Performance rating scale. This score was just below the mean score of 52% which Umansky (1983) calculated for 10 and 11 year old physically awkward children. Of the seventeen items presented in the rating scale, her teacher indicated that Shirley performed eleven of them poorly and six adequately. Of the four cognitively-loaded items, only the "throw the ball in front of a moving teammate so that the ball can be received" item was checked in the adequately category. Her teacher agreed that Shirley was physically awkward and that she should be referred for professional evaluation of her gross motor skills. She also suggested that Shirley's awkwardness was a result of her having congenital club feet. She commented, "I personally feel that with her handicap, she is performing quite well."

Free Time Leisure Pursuits Questionnaire

The results of Shirley's Free Time Leisure Pursuits Questionnaire are presented in Table IX.

Neighbourhood Recreational Activities

Shirley displayed an interest in the group activity of soccer; however, generally she was not involved in team sport situations or games of low organization. The individual activities in which she most often participated were skipping, skating, and swimming. Apparently she was not interested in the other activities included in this portion of the questionnaire. Playing on swings was the only low skill activity she liked. For the most part Shirley's indoor activities included video games, cards, board games and gymnastics. Her mother reported that she never played with her brother nor with any other children. Her favourite

TABLE IX

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #4: Shirley

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	tag and hide and seek softball road hockey ice hockey	snowball fights	soccer	
Individual	playground equipment balls skateboard X-country ski	bike climb trees rollerskate		skip skate swim
Low Skill	watch games build snowmen slide on ice	toboggan	play on swings	
Indoor	cars floor hockey	dolls	cards board games gymnastics	video games

pastime, when at home, was watching television.

Community-Sponsored Activities

Shirley had never been a member of a social club like Brownies. She had attended swimming lessons every summer and at the time of the interview was preparing to repeat her Green Badge. She had also participated in ice skating lessons for two years and was working towards her second badge; elementary level. She especially enjoyed taking ceramic lessons during the past year.

When Shirley was eight years old she participated in the Edmonton East Wood Community League Soccer Program. Her mother felt that she was "good at kicking but poor at running". Shirley explained that she just "did not want to play soccer". This one season of soccer had been her only minor sports experience. She had never attended any type of camp nor any special physical activity program.

General Comments

Shirley and both of her parents were present during the interview. Her father seemed interested in the questions; however, he had difficulty understanding English. His wife translated some of the conversation into Italian, but he chose to let her answer most of the questions. Shirley commented that she felt adequate in physical pursuits; however, she was just not interested in them. Her mother stated that she personally did not like sports which clearly reinforced Shirley's attitude towards all physical activity.

Discussion

Shirley's motor difficulties were confirmed by the results obtained on the Motor Performance Test Battery and the Motor Performance Rating

Scale. Her interests in neighbourhood play activities usually involved individual skills. She had participated in the individual community-sponsored activities of swimming and ice skating lessons and had also been involved in one season of minor soccer. Her mother reported that she had no after school playmates. Instead she remained indoors and watched television. McKinlay (1978) has suggested that a history of unsuccessful physical activity experiences often result in children avoiding activities which are within their skill repertoire. The results obtained in this study suggest that Shirley was aware of her movement difficulties and was definitely avoiding most physical activity situations.

Subject #5: Tracey

Subject Characteristics

Tracey was a member of the control sample of the IBM-University of Alberta, Learning Disabilities Project. She obtained a performance score of 102 and a verbal score of 93 on the Lorge Thorndike Intelligence Test. On the Harter Perceived Competence Scale, Tracey obtained scores of 2.1 on the Cognitive, 2.6 on the Social, 3.0 on the Physical and 2.7 on the General subscales. She was left handed. Her physical stature when compared to the Canada Fitness Award, height/weight ratio norms placed her in the 10th percentile for her age and sex indicating that she was relatively overweight. Tracey was the youngest of four children, three females and one male.

Motor Performance Test Battery

During the initial motor performance assessment, Tracey obtained scores below the 10th percentile on three items, the stork balance (both feet), the wide board balance (left foot) and the controlled jump

(left foot). Overall, four of her scores were below the 10th percentile on the second assessment; specifically, the throw and catch, dodge run, stork balance (left foot) and the controlled jump (left foot).

Gross-Motor Performance Rating Scale

Tracey obtained a score of 52% on the Gross-Motor Performance Rating Scale for 10 and 11 year old children (Umansky, 1983). She was rated as performing poorly on six of the seventeen items, three of these ratings being on cognitively-loaded tasks. Tracey's performance on the remaining eleven activities were rated by her teacher as being at the adequate level. Her teacher indicated that although Tracey was physically awkward, she did not believe that she should be referred for professional evaluation of her gross motor skills.

Free Time Leisure Pursuits

The results of Tracey's Free Time Leisure Pursuits Questionnaire may be found in Table X.

Neighbourhood Recreational Activities

As indicated in the table, she apparently enjoyed participating in a number of individual recreational activities; however, she was never involved in team sport activities except softball.

The only group activity in which Tracey was interested was softball. She regularly participated with her friends in the individual activities of biking, skipping, ice skating, rollerskating and swimming. She also showed an interest in three of the low skill items included in the questionnaire. Tracey often played with dolls, cards, board games and performed gymnastic activities, but her main indoor interests were video games and television. She sometimes read at home for pleasure. Her

ABLE X

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #5: Tracey

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	soccer road hockey ice hockey tag and hide and seek	snowball fights	ball	
Individual	climb trees balls skateboard		playground equipment X-country ski	bike skip rollerskate ice skate swim
Low Skill	watch games build snowmen		play on swings toboggan slide on ice	
Indoor	cars floor hockey		cards board games gymnastics dolls	video games

father reported that she had two close friends in the neighbourhood with whom she always played.

Community-Sponsored Activities

Tracey had never participated in a social group such as Brownies. She attended swimming lessons as a baby, at age three and at age eight. At the time of the parent interview she had obtained her third swimming badge. Her father reported that the goal of the lessons was to upgrade her skills. At age six Tracey participated in Ukrainian Dance Lessons. Her father reported that although she enjoyed this activity and appeared to perform satisfactorily, she attended the lessons for only one year.

Tracey had never played on a minor sports team. She had never attended a camp nor any special physical activity program. Her father felt that camping in particular was not important since the family participated in this activity during summer holidays and weekends.

General Comments

Tracey's father was interviewed. He was not surprised by the suggestion that Tracey might be physically awkward; however, he attributed her awkward appearance to her being left handed. He mentioned that although she had asked to play minor softball, no steps had been taken to enroll her in a program.

Discussion

Tracey was one of the two non-reading disabled children included in the physically awkward sample. It was reported that she participated in a number of individual play activities; however, she showed little interest in group activities. She had attended two types of lessons:

swimming and Ukrainian dance. Her father reported that she had two close friends in the neighbourhood. It is interesting to note that almost all of the activities performed by these three girls were individual in nature. Thus, even though they played together, the successfulness of the activities was not dependent upon the motor skills of each child. This behaviour may be regarded as being a very efficient coping mechanism which allowed Tracey to participate in social play situations without emphasizing her lack of proficiency in motor skills.

Subject #6: Warren

Subject Characteristics

Eleven year old Warren was the oldest male in the physically awkward sample. A member of the control sample of the IBM-University of Alberta, Learning Disabilities Project, he demonstrated a preference for right handedness. Warren obtained scores of 81 on the Performance and 91 on the Verbal subtest scales of the Lorge Thorndike Intelligence Test. He obtained scores of 3.0 on the Cognitive, 2.0 on the Social, 2.0 on the Physical and 2.7 on the General subscales of the Harter Perceived Competence Scale. He was rated as being in the 35th percentile for his age and sex on the Canada Fitness Awards height/weight ratio norms. Warren was the youngest child in a family of two boys.

Motor Performance Test Battery

Warren obtained extremely low results during both administrations of the Motor Performance Test Battery. Of a possible nine scores, he obtained only one above the 10th percentile on each assessment. On the first assessment he scored at the 27th percentile on the controlled jump (left foot) and on the second assessment he was at the 46th percentile on the stork balance (left foot).

Gross-Motor Performance Rating Scale

Warren obtained a score of 51% on the 10 and 11 year old Gross Motor Performance Rating Scale. Of the seventeen items presented in the inventory, his physical education teacher indicated that Warren performed poorly on nine of the activities, two of these being cognitively-loaded tasks. She rated him as performing adequately on seven tasks. The only activity in which he was rated as performing well was "Kicks the ball between goal posts". Furthermore, she indicated that Warren was physically awkward and that he should be referred for professional evaluation of his gross-motor skills. She also commented that his "performance was lower than that of his classmates".

Free Time Leisure Pursuits Questionnaire

The results of Warren's Free Time Leisure Pursuits Questionnaire are described in Table XI.

Neighbourhood Recreational Activities

A brief review of the major items follows. The only group activity in which Warren ever participated was snowball fights. He participated in the individual culturally-normative activities of biking, ice skating and swimming, but he was not interested in any of the other items included in this section of the questionnaire nor was he interested in any of the items in the low skill category. Although he participated in the indoor activities of cards, board games and video games his mother reported that he usually played with his Lego set and their video cassette recorder. His mother reported that he always played alone "because he had no friends in the neighbourhood".

TABLE XI

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #6: Warren

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	soccer ice hockey tag and hide and seek	softball road hockey	snowball fights	
Individual	balls skip X-country ski rollerskate skateboard climb trees playground equipment		swim	bike ice skate
Low Skill	play on swings watch games toboggan	slide on ice	build snowmen	
Indoor	dolls gymnastics	cars floor hockey	cards board games video games	

Community-Sponsored Activities

Warren had never participated in a social group such as Boy Scouts. At the time of the interview he had been an Alter Boy for five years in his Ukrainian, Greek Catholic Church. In the past he had taken Ukrainian dance and swimming lessons. His mother reported that bad knees resulted in his quitting the dance lessons after only one year. She was planning to enroll him in the junior level of Red Cross swimming lessons in the fall.

At the time of the interview Warren was about to begin computer lessons organized by the McCauley Boys Club. His mother felt that he was very interested in this endeavor. Warren had never played on a minor sports team, nor had he ever attended any type of camp or special physical activity group.

General Comments

Warren's mother was interviewed. She was not surprised in the least by the suggestion that Warren had gross-motor difficulties. She commented that he was disinterested in sports because he had had no association with other children his age outside of school. At the time of the interview, she was interested in enrolling him in Tae Kwon Do, self defense lessons. She felt that this activity would be of more benefit to Warren, than would a sports program, because the children in the neighbourhood harassed him. She felt the benefits of Tae Kwon Do would be to teach him how to fight, to improve his fitness and to improve his coordination. She also reported that she would not enroll him in a sports program because she was afraid of him acquiring a sport related injury.

Discussion

Based on the results of the Motor Performance Test Battery and the Motor Performance Rating Scale, Warren was truly a physically awkward child. He participated in relatively few neighbourhood play activities, the majority of them being individual in nature. He had also attended swimming and Ukrainian dance lessons. During the interview, Warren's mother indicated that he had no after school playmates; thus, he spent most of his time alone indoors. Wall's (1982) description of the syndrome of physical awkwardness clearly describes Warren's interests and experiences in both neighbourhood play and community-sponsored activities.

Subject #7: Molly

Subject Characteristics

Eleven year old Molly was the oldest female in the physically awkward sample. She was identified as being reading disabled by the IBM-University of Alberta, Learning Disabilities Project. On the Lorge Thorndike Intelligence Test, Molly obtained scores of 88 on the performance and 93 on the verbal subtest scales. She demonstrated a preference for right handedness and was in the 30th percentile for her age and sex on the Canada Fitness Award height/weight ratio norms. Molly obtained scores of 2.[illegible] on the Cognitive, 2.1 on the Social, 2.1 on the Physical and 2.3 on the General subscales of the Harter Perceived Competence Scale. Molly [illegible] the second of three children, two girls and one boy.

Motor Performance Test Battery

As can be seen in Table III, Molly's performance, as reflected in the percentile scores decreased from the first to the second assessment on

all items except the controlled jump (right foot). Surprisingly, she obtained her highest scores of 68 on the dodge run and the wide board balance (left foot). Her highest scores were a 67th percentile rating on the dodge run and a 59th percentile rating on the wideboard balance (left foot) during the first test administration. These scores decreased to the 24th and the 8th respectively on the second motor performance assessment.

Gross-Motor Performance Rating Scale

On the Gross-Motor Performance Rating Scale for ten and eleven year old children, Molly obtained a score of 41%. She was rated by her teacher as performing very poorly on five of the seventeen items, four of which were cognitively-loaded tasks. On the remaining items she received eight poor ratings, two adequate ratings and two well ratings. These last two were on the items "Changes direction readily in a running game like tag" and "Can move away from the ball quickly in games like dodge ball". Her teacher agreed that she was physically awkward; however, he would not refer her for professional evaluation of her gross-motor skills, since he "did not know enough about the consequences of such a referral". He also commented that: "Over the years Molly's motor skills have improved. While she is lower than the class generally she has always been accepted by her classmates in any games or physical education activity and on the playground. Molly tries hard and plays hard."

Free Time Leisure Pursuit Questionnaire

Molly's results on her Free Time Leisure Pursuits Questionnaire are described in Table XII.

TABLE XII

LEISURE PURSUITS QUESTIONNAIRE RESULTS

Subject #7: Molly

ACTIVITY	NEVER	RARELY	SOMETIMES	FREQUENTLY
Group	softball road hockey		snowball fights	tag and hide and seek soccer ice hockey
Individual	climb trees skateboard X-country ski	rollerskate	playground equipment balls skip	bike ice skate swim
Low Skill	slide on ice		play on swings build snowmen	watch games toboggan
Indoor	cars	cards board games video games	dolls floor hockey gymnastics	

Neighbourhood Recreational Activities

Molly participated in both the games of low organization and in group sports. She regularly performed the culturally-normative individual activities of bike riding, ice skating, swimming, as well as skipping, playing with balls and on playground equipment. Since Molly's family was highly involved in minor soccer, she frequently watched her brother's and sister's teams play. During the winter her family tobogganned every weekend. Molly rarely participated in the indoor activities of cards, board games and video games. She did however, play floor hockey and performed gymnastics activities. She also spent time playing with dolls. Her father reported that she seldomly read and frequently watched television. Recently she had begun to play with other children in her neighbourhood.

Community-Sponsored Activities

At age eight Molly joined the Gold Bar Brownie Pack. Her father reported that in as much as he was a single parent he was unable to provide the female help which was required for her to progress in this group. As a result, she quit after one year.

Molly had participated in swimming lessons since she was four. At the time of the interview she had just completed her Blue Badge. She had participated in figure skating lessons for six years. Her father reported that she performed this activity at an average level of proficiency. She attended Irish Dance lessons for two years when she was five and six years old. She was forced to stop this activity because her father could not afford the time to drive her across the city to her lessons. At age ten, Molly began taking organ lessons. She did not show enough interest in this activity, refusing to practise, thus

her family stopped providing the lessons after one year.

Molly had played minor soccer for four years; her father said that she was an average player and noted that she played "like a girl, lady-like, and not aggressive". She had never attended a camp nor had she participated in any special physical activity programs.

General Comments

When asked to describe his daughter's physical ability, Molly's father said, "She has good coordination, she does not lose her balance." He also reported that she had bad days and was easily upset. Consequently, he suggested that her relatively poor performance on the Gross Motor Performance Test Battery might have been a result of her having had a bad day.

Discussion

Although Molly was definitely physically awkward as determined by the two motor performance assessment devices, she participated in an unexpected number of neighbourhood play and community-sponsored activities. Apparently her participation in these activities was a direct consequence of her father's encouragement towards family recreational experiences. He reported that many of the activities included in the Free Time Leisure Pursuits Questionnaire were performed by the whole family each Sunday. Even though Molly had this opportunity to develop her proficiency in motor skills, she still displayed some of the expected characteristics of an awkward child.

Like most of the other children included in this study, Molly had withdrawn from a number of community-sponsored programs (i.e., Brownies, Irish Dance and organ lessons) and in the past had spent a great deal of time alone, watching television.

A number of researchers have emphasized the importance of practise in the remediation of motor difficulties. (Taylor and McKinlay, 1978; Gordon, 1969; Wall, 1982; 1985). Although Molly's father was unaware of need for remediation, the most important result of his family, physical activity experiences, may have been the extra opportunity which they gave to Molly to practise and develop motor skills.

General Discussion of the Leisure Pursuits of the Seven Physically Awkward Children

Methods of Coping

One of the most interesting findings of this study was how well all of the seven children were able to cope with their respective disabilities. Clearly their personal choices of individual as opposed to group activities, and response and/or perceptually-loaded as opposed to cognitively-loaded tasks were the most appropriate coping mechanisms available to them. Thus their somewhat surprising results obtained on the Harter Perceived Competence Scale may indeed by indicative of their actual feelings of competence. That is their ability to avoid physical activities has resulted in their still relatively positive feelings of self.

Another apparent coping mechanism utilized by this group of children was their selection of playmates. As reported earlier, the majority of children included in this study usually played alone or with children younger than themselves. Again this choice reflects a very efficient means of coping with potentially unsuccessful situations. By playing with younger friends, older, physically awkward children could feel confident that the activities chosen would involve less complex motor skills. Furthermore, by becoming involved in situations like this they would have the potential to assume the role of leader thereby ensuring

that the activities performed were within their skill repertoire.

It would be expected that children who were aware of their lack of proficiency in motor skills would certainly not encourage their parents to enroll them in physical activity programs. Likewise, they would remove themselves from unsuccessful experiences as soon as they realized their inability to perform at the same level as their peers. Thus the results obtained in this study which document participation in relatively few community-sponsored programs and a relatively high incidence of withdrawal from these programs may again reflect their well developed ability to cope with unsuccessful physical activity situations.

Further evidence that the seven children included in this study were coping well with their motor difficulties were the parents' lack of awareness of their specific problems. Based on the results of the two motor assessment devices it is clear that all seven children included in this study were truly physically awkward. The results which indicated that four of the seven sets of parents were not convinced that their children had any movement difficulties suggest that the avoidance mechanisms used by these children were working. In other words, the actual activities in which these children were participating were not likely observed by their parents. Thus the parents may have been unable to accurately describe their children's motor performance.

Cultural Factors

As mentioned earlier, although researchers have been unable to arrive at a consensus concerning the aetiology of the syndrome of physical awkwardness, a number of factors have been identified as contributing to this syndrome. Motor learning theorists have emphasized the importance of practice in the acquisition of motor skills. In so

doing, they stress the need for regular play experiences in order to develop a suitable repertoire of skills (Wall, McClements, Bouffard, Findlay and Taylor, 1985). Practice opportunities can be limited for a number of reasons. It has usually been assumed in the literature that the reason physically awkward children avoid practicing motor activities is that they are unable to perform culturally-normative skills at an acceptable level of proficiency. Hence, participation in these activities results in less than positive experiences for these children. The findings of this study suggest that cultural factors may also play an important role in limiting practice opportunities.

The seven physically awkward children included in this study came from a variety of cultural backgrounds; two families were first generation Italian, one first generation Irish, two were of Ukrainian descent, and two remaining were English and French Canadian. During the parent interview it became clear that the cultural background might have influenced the recreation choices of the children involved. As might have been expected the most direct consequence of the children's cultural heritage was participation in ethnic dance lessons (e.g., both of the Ukrainian children and the Irish girl had been enrolled in ethnic dance lessons of their own heritage).

Wall (1982) suggested that cultural expectations vary greatly with regard to sport and physical activity; hence, children should only be identified as being physically awkward within the context of their own culture. Consequently, a question arises as to which physical activities are culturally-normative to children from different cultural backgrounds. The researchers who have developed screening devices for the identification of awkward children are confident that the items included in these batteries are culturally-normative to Canada. Even so, they may not be

culturally-normative to the home environments of many children.

Although no firm evidence was obtained during this study, to determine the effect of cultural background on the incidence of physical awkwardness, the findings do indicate that further examination of this area is warranted.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The seven physically awkward children examined in this study were identified by two different instruments: the Motor Performance Test Battery and the Motor Performance Rating Scale, as being truly physically awkward. Although this small sample of children exhibited a number of the behaviours which have been associated with the syndrome of physical awkwardness, some of the more common characteristics of physically awkward children which have been reported in the literature, were not typical of this group.

This sample was similar to groups of physically awkward children described by Gubbay (1975) and Taylor (1982), in that it was comprised of relatively equal numbers of males and females. Neither the discrepancy in intelligence test scores (i.e., verbal score significantly higher than performance score) nor the higher incidence of ambidexterity, ambilaterality, or lack of hand dominance (Walton, Ellis and Court, 1962) were found in this sample. Six of the seven children in the study, obtained scores below the 40th percentile on the Canada Fitness Award height-weight ratio norms, indicating a tendency towards being overweight. For the most part, this sample did not demonstrate feelings of incompetence in the four sub-scales (i.e., cognitive, social, physical and general) of the Harter Perceived Competence Scale (1979).

A high degree of variability in performance was one of the more obvious results of the two administrations of the Motor Performance Test Battery. The seven teachers involved in this study, apparently

had little difficulty identifying the physically awkward children in their classes. Furthermore, they recognized that the motor skills which were least developed by these awkward children were the cognitively-loaded ones (i.e., activities which have a main emphasis on the decisions made prior to the execution of an action [Wall, 1985]).

Wall and Taylor (1983) have suggested that the lack of proficiency in motor skills contributes to the syndrome of physical awkwardness by limiting the type and number of physical activities available to unskilled performers. An analysis of the results of the free time leisure pursuits questionnaire indicate that the children in this study definitely participated in a limited number of activities. Parents reported that for the most part, their children were uninterested in the activities included in the group, individual, low skill and indoor items of the questionnaire. Although specific reasons for this outcome were not voiced by the parents, further evidence was gathered during the interview which apparently supported the hypotheses that participation in physical activities is severely limited by poor performance levels.

As one would expect from children with minimal physical skill, whenever these children did become involved in group physical activities they usually chose tasks with low spatial-temporal task demands. Consequently, they tended to participate in individual rather than group activities. When they participated in group activities they were usually games of low organization rather than the more complex team sports such as soccer and hockey. Furthermore, their after school playmates tended to be younger than themselves. Clearly this was to be expected considering that their choice of physical pursuits represented activities usually enjoyed by younger children.

All seven of the children had been enrolled in at least one organized extra-curricular activity. It is interesting to note the proportion of these children who had quit participating in these activities. Collectively they had been enrolled in twenty-one separate programs and at the time of the parent interview they were no longer involved in eleven of them.

As mentioned previously the seven children examined in this study definitely exhibited a number of the behaviours associated with the syndrome of physical awkwardness. The tendency for the group to be overweight, and their relatively sedentary lifestyles as determined by the Free Time Leisure Pursuits Questionnaire indicates that unless remediation is implemented quickly, the potential exists for all seven children to develop some of the emotional and/or behavioural problems which unfortunately are often a consequence of physical awkwardness.

Conclusions

The initial question of this thesis asked whether a group of truly physically awkward children could be identified by using the results of two administrations of the Motor Performance Test Battery. Inasmuch as the scores obtained on the Motor Performance Rating Scale identified the children in the sample as having the skill characteristics of physically awkward children and the results from the Free Time Leisure Pursuits Questionnaire indicated how little these children were involved in play activities, one may conclude that there is considerable convergent validity supporting the contention that these children were truly physically awkward. At the same time, it was surprising to find that these children felt competent in the physical domain; however, one might well question the construct validity of the Harter Perceived Competence

Scale, based on these results. Since a relatively high degree of variability in motor performance was recognized in this sample, the decision to have the criterion for determining awkwardness a general three scores below the 10th percentile rather than specific scores on certain tasks was crucial for this identification process.

For the most part the expected psychometric characteristics or marker variables of physically awkward children were not found in this sample. No significant differences were found between verbal and performance Intelligence Test subscale scores. None of the children demonstrated problems related to lack of hand dominance (i.e., ambilaterality or ambidexterity). Six of the children were apparently unaffected by feelings of incompetence in the four subscales of the Harter Perceived Competence Scale (1979). This group of children did, however, display the expected characteristics of being comprised of relatively equal numbers of males and females who in turn showed a tendency towards being overweight.

By completing the Motor Performance Rating Scale the seven teachers who participated in this study were able to recognize the gross-motor difficulties experienced by this group of children. Even so, most of the teachers were reluctant to identify and/or to refer the physically awkward children for professional evaluation of their gross-motor skills. Apparently the teachers were unaware of programs such as the Motor Development Clinic. Consequently they were unwilling to refer children for evaluation of their motor skills when they did not know where or by whom the evaluation would be conducted. For the most part the teachers had difficulty understanding the prediction factor of the rating scale. Again they appeared to be reluctant to rate the motor performance of children, on tasks which they had never observed.

In general, the seven children included in this study preferred to participate in individual rather than group activities. The few group activities in which they did participate were usually games of low organization which required fewer prerequisite motor skills and less co-operation than sport activities such as soccer and hockey. As expected, the few after school playmates of these seven children were usually younger than themselves.

Again, these children participated in relatively few organized extra-curricular activities. The majority of them had never experienced popular programs such as Boys and Girls Clubs, minor sports, and camp situations. Although all had attended at least one type of lesson, six had also quit at least one lesson situation.

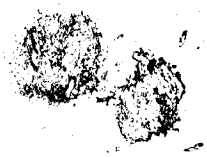
Recommendations

Although a number of psychometric characteristics or marker variables have been associated with the syndrome of physical awkwardness, it is not required that a child display all of them in order to be identified as physically awkward. The results of this study suggest that further research to determine the occurrence of marker variables should be conducted.

By conducting a parent interview, based on the Free Time Leisure Pursuits Questionnaire, relatively unique but important information was collected concerning the types of activities in which physically awkward children participated. This profile data would be useful in the identification and leisure counselling of physically awkward children. Thus, it is recommended that further studies in this area collect such information.

The results of this study indicate that cultural factors may have an influence on the incidence of physical awkwardness. While it was not within the realm of this study to investigate this issue, it is recommended that further studies be conducted in this area.

REFERENCES



REFERENCES

Abbie, M.H., Douglas, H.M., & Ross, K. E. (1978). The clumsy child: Observations in cases referred to the gymnasium at the Adelaide Children's Hospital over a three year period. The Medical Journal of Australia, January 28, 65-69.

Allard, F., & Starkes, J.I. (1980). Perception in sport: Volleyball. Journal of Sport Psychology, 2, 22-33.

Anderson, J.R. (1982). Acquisition of cognitive skill. Psychological Review 89, 369-406.

Annell, A.L. (1949). School problems in children of average or superior intelligence: A preliminary report. Journal of Mental Science 95, 901-909.

Arend, S. (1980). Developing the substrates of skillful movement. Motor Skills: Theory into Practice 4, 3-10.

Arnheim, D.D., & Sinclair, W.A. (1979). The clumsy child: A program of motor therapy 2nd edition. St. Louis, Missouri: C.V. Mosby Company.

Baker, J. (1981). A psycho-motor approach to the assessment and treatment of clumsy children. Physiotherapy 67(12), 356-363.

Brenner, M., Gillman, S., Zangwill, O., & Farrell, M. (1967). Visuometer disability in school children. British Medical Journal 41, 259-262.

Brown, A.L. (1978). Knowing when, where and how to remember: A problem of meta cognition. In R. Glaser (Ed.), Advances in instructional psychology (pp. 77-165). Hillsdale, N.J.: Erlbaum.

Bruininks, V., & Bruininks, R. (1977). Motor proficiency of learning disabled and non-disabled students. Perceptual and Motor Skills 44, 1131-1137.

Bruner, J.S. (1973). Organization of early skilled action. Child Development 44, 1-11.

Brunt, D., Magill, R.A., & Eason, R. (1983). Distinctions in variability of motor output between learning disabled and normal children. Perceptual and Motor Skills 57, 731-734.

Calkins, J.A. (1977). Clumsy children and problems with identification. Unpublished Master's thesis, University of California, Los Angeles.

Chi, M.T.H. (1978). Knowledge structures and memory development. In R. Siegler (Ed.), Children's thinking: What develops? (pp. 73-96). Hillsdale, N.J.: Erlbaum.

Clarke, H. (Ed.). (1979). President's council on physical fitness and sports: Physical and motor sex differences. Physical Fitness Research Digest 9(4), 1-27.

Dare, M.T., & Gordon, N. (1970). Clumsy children: A disorder of perception and motor organization. Developmental Medicine and Child Neurology 12, 178-185.

Decroly, J., & Bratu, E.A. (1934). The measurement of motor functions in children and adolescents. Rev. Pedog. 4(12).

Doll, E.A. (1951). Neurophrenia. American Journal of Psychiatry 108, 50-53.

Dweck, C.S. (1980). Learned helplessness in sport. In C.H. Nodeau, W.R. Halliwell, K.M. Newell, & G.C. Roberts (Eds.), Psychology of motor behaviour and sport - 1979 (pp. 1-11). Champaign, Il: Human Kinetics.

Ekblom, C. (1968). Effect of physical training in adolescent boys. Journal of Applied Physiology 24(4), 518-528.

Flavell, J.H., & Wellman, H.M. (1977). Metamemory. In R.V. Kail Jr. & J.W. Hagen (Eds.), Perspectives on the development of memory and cognition (pp. 3-33). Hillsdale, N.J.: Erlbaum.

Gibson, B.J. (1980). An attributional analysis of performance outcomes and the alleviation of learned helplessness on motor performance tasks: A comparative study of educable mentally retarded and non-retarded boys. Unpublished Doctoral dissertation, University of Alberta.

Glencross, D.J. (1980). Levels and strategies of response organization. In G.E. Stelmach & J. Requin (Eds.), Tutorials in motor behaviour (pp. 551-566). New York: North Holland Publ.

Gordon, N. (1969). Helping the clumsy child in school. Special Education 58, 19-20.

Gordon, N., & McKinlay, I. (Eds.) (1980). Helping clumsy children. Edinburgh: Churchill Livingstone.

Gubbay, S.S. (1975). Clumsy children in normal schools. The Medical Journal of Australia 1, 233-236.

Gubbay, S.S. (1978). The management of developmental apraxia. Developmental Medicine and Child Neurology 20, 643-646.

Gubbay, S.S., Ellis, E., Walton, J.N., & Court, S.D. (1965). Clumsy children: A study of apraxic and agnosic defects in 21 children. Brain 88, 295-312.

Hall, M.A., & Richardson, D.A. (1982). Fair ball: Toward sex equality in Canadian sport. Ottawa: The Canadian Advisory Council on the Status of Women.

Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. Human Development 21, 34-64.

Harter, S. (1979). Perceived competence scale for children manual: Form O. University of Denver (Colorado Seminary).

Harter, S. (1980). The development of competence motivation in the mastery of cognitive and physical skills: Is there still a place for joy? In G.C. Roberts & D.M. Landers (Eds.), Psychology of motor behaviour and sport - 1980 (pp. 3-29). Champaign, Il: Kinetics.

Harter, S. (1982). The perceived competence scale for children. Child Development 53, 87-97.

Henderson, S.E., & Hall, D. (1982). Concomitants of clumsiness in young school children. Developmental Medicine and Child Neurology 24, 448-460.

Illingworth, R.S. (1968). Delayed motor development. Pediatrics Clinics of North America 15, 569-580.

Keogh, B., Major, S., Reid, H., Gandara, P., & Omori . (1980). Proposed markers in learning disabilities research. Journal of Abnormal Child Psychology 8, 21-31.

Keogh, J. (1968). Incidence and severity of awkwardness among regular school boys and educationally subnormal boys. Research Quarterly 39(3), 806-808.

Keogh, J.F., Sugden, D.A., Reynard, C.L., & Calkins, J.A. (1979). Identification of clumsy children: Comparisons and comments. Journal of Human Movement Studies 5, 32-41.

Kopp, C.B. (1982). Antecedents of self-regulation: A developmental perspective. Developmental Psychology 18, 199-214.

Lewko, J. (1976). Current practices in evaluating behaviour of disabled children. The American Journal of Occupational Therapy 30, 413-419.

McKinlay, I. (1978). Strategies for clumsy children. Developmental Medicine and Child Neurology 20, 494-501.

Morris, P.R., & Whiting, H.I.A. (1971). Motor impairment and compensatory education. Philadelphia: Lea & Febiger.

Norman, D.A., & Shallice, T. (1980). Attention to action: Willed and automatic control of behaviour. (Tec. Rep). San Diego: University of California, Center for Human Information and Processing.

Orton, S.T. (1937). Reading, writing and speech problems in children. New York: W.W. Norton.

Paine, R.S. (1968). Syndromes of "minimal cerebral damage". Pediatric Clinics of North America 15, 779-801.

Piechtl, H.F.R., & Stemmer, C.J. (1962). The choreiform syndrome in children. Developmental Medicine and Child Neurology 4, 119.

Pringle, M.L.K., Butler, N., & Davie, R. (1966). 11,000 seven-year olds. London: Longmans Green.

Reuben, R.N., & Bakwin, H. (1968). Developmental clumsiness. Pediatric Clinics of North America 15(3), 601-610.

Reynard, C.L. (1975). Nature of motor expectancies and difficulties in kindergarten children. Unpublished Master's thesis, University of California, Los Angeles.

Schmidt, R.A. (1975). A schema theory of discrete motor learning. Psychological Review 82, 225-260.

Spillane, J.D. (1942). Lancet 1, 42.

Stott, D.H., Moyes, F.A., & Henderson, S.E. (1972). A test of motor impairment. Sough: N.F.E.R. Publishing Co. Ltd.

Sugden, D.A. (1972). Incidence and nature of motoric problems and related behaviours in kindergarten children. Unpublished Master's thesis, University of California, Los Angeles.

Symes, K. (1972). Clumsiness and the sociometric status of intellectually gifted boys. Bulletin of Physical Education 9, 35-41.

Taylor, M.J. (1980). A screening test for skill deficient children: A pilot study. Unpublished paper, University of Alberta.

Taylor, M.J. (1982). Physical awkwardness and reading disability: A descriptive study. Unpublished Master's thesis, University of Alberta.

Taylor, D., & McKinlay, I. (1979). What kind of thing is being clumsy? Child: Care, Health & Development 5, 167-175.

Umansky, E.F. (1983). The development of a motor performance checklist for identifying physically awkward children. Unpublished Master's thesis, University of Alberta.

Van der Lugt, M.J.A. (1939). Un profil psychomoteur. Paris. Auber (Editions Montaigne).

Wall, A.E. (1982). Physically awkward children: A motor development perspective. In J.P. Das, R.F. Mulcahy, & A.E. Wall (Eds.), Theory and research in learning disabilities (pp. 253-268). New York: Plenum Press.

Wall, A.E. (1985). Identifying, teaching and counselling physically awkward children: A program development project submitted to Planning Services Branch, Alberta Education.

Wall, A.E., & Taylor, M.J. (1984). Physical awkwardness: A motor development approach to remedial intervention. In A. Brown, D. Brickell, L. Guries, E. McLeish, P. Morris, & D. Sagden (Eds.), The Scientific Committee of the Fourth International Symposium of Adapted Physical Activities. Bodmin Cornwall: Robert Hartnoll Ltd., pp. 158-176.

Wall, A.E., McClements, J., Bouffard, M., Findlay, H., & Taylor, M.J. (1985). A knowledge-based approach to motor development: Implications for the physically awkward. Adapted Physical Activity Quarterly 2, 21-42.

Walton, J.N., Ellis, E., & Court, S.D.M. (1962). Clumsy children: Developmental apraxia and agnosia. Brain 85, 603-612.

Whiting, H.T.A., Clarke, T.A., & Morris, P.R. (1969). A clinical validation of the Stott test of motor impairment. British Journal of Social and Clinical Psychology 8, 270-274.

Wright, W.H., & Michael, W.B. (1977). The development and validation of a scale for school observation of characteristics associated with learning disabilities and minimal brain dysfunction in elementary school boys. Educational & Psychological Measurements 37, 917-928.

Yarmolenko, A. (1933). The motor sphere of school age children. F. Genet. Psychl. 42, 298-316.

Zaichowsky, L., Zaichowsky, L., & Martinek, T. (1980). Growth and development: The child and physical activity. Toronto: C.V. Mosby Company.

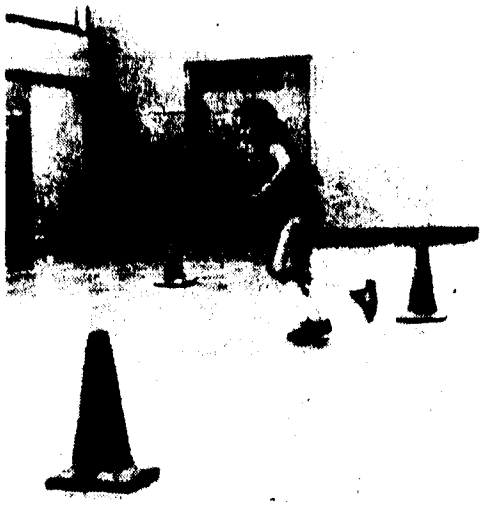
APPENDICES

APPENDIX A

MOTOR PERFORMANCE TEST BATTERY

STORK BALANCE
Right and Left

EQUIPMENT	Stop watch
PREPARATION	Subject must wear running (gym) shoes. The starting position must be away from walls and furniture. Tester must stand in front of and to the side of the subject so that the feet can be observed clearly.
TASK	Subject stands on one foot and places the sole of the other foot against the side of the supporting knee. The hands are placed on the hips with the fingers facing forwards. Tester should ensure that subject is in the correct position before starting the stop watch. The task is repeated with the other leg raised.
TRIALS	Three for each leg.
SCORING	Discontinue timing after 20 seconds. Record time for each trial. Stop watch: If the standing leg is moved from the original position. If the free foot is moved from the inside of the knee. If the hands are removed from the hips. If the subject cannot adopt the balancing position,



DODGE RUN

EQUIPMENT	5 traffic cones masking tape 8' tape measure gym floor 40' x 16' stop watch scoring sheet
LAY OUT	Course consists of 5 traffic cones placed as per diagram, on corners of 8' square. Each cone is outlined on the floor with tape so that if it is knocked over accurate replacement is possible. In addition the path is marked on the floor with masking tape to avoid confusion.
STARTING POSITION	Student stands in starting box. Student must wear running shoes.
TASK	On signal ready, go, the subject runs a weaving pattern to the outside of each cone. Tester stops the watch as subject passes the last cone. If subject traces incorrect path, trial is repeated.
TRIALS	Three
SCORING	Average time of 3 trials.

THROW, CLAP AND CATCH

EQUIPMENT	Tennis ball Scoring grid on Record Sheet
PREPARATION	The starting position must be away from walls and furniture. Tester stands in front of and to the side of the subject.
TASK	Subject throws the ball into the air with preferred hand, and catches the ball cleanly in two hands. The ball must not be trapped against the body or clothing. Test to three trials or success, whichever comes first in the following categories. Discontinue testing with three consecutive failures.
TRIALS	a) Catch the ball with both hands. b) Catch the ball with both hands after 1 clap. c) Catch the ball with both hands after 2 claps. d) Catch the ball with both hands after 3 claps. e) Catch the ball with both hands after 4 claps. f) Catch the ball with preferred hand after 4 claps.
FAILURE	If ball is not caught in prescribed manner, or clap is not visible or audible before the ball is caught.

WIDE BOARD BALANCE
Right and Left

EQUIPMENT	Stop watch One balance board Subject must wear running (gym) shoes.
PREPARATION	The balancing board should be placed with the keel on the underside, away from walls and furniture. Tester must stand in front of and to the side of the subject so that the feet can be clearly observed.
TASK	Subject balances on the board on one leg. Tester may advise the subject to place his foot firmly on the middle of the board then raise the other foot gently. Tester should ensure that the subject is in the correct position before starting the stop watch.
TRIALS	Three for each leg.
SCORING	Discontinue timing after 10 seconds. Record time for each trial. Stop watch: If the standing leg is moved from the board. If the board tilts so that the sides of the board touch the floor. If the free leg touches the floor. If the subject cannot adopt the balancing position, assess score of 0.

CONTROLLED JUMP
Right and Left

EQUIPMENT	Set of jumping stands Weighted cord Stop watch
PREPARATION	Tester measures subject's knee height from the floor to the lower border of the kneecap and places the cord on the pins at the same height. The pins should be on the far side of the child as he jumps to allow the cord to fall off without pulling down the stand. The jumping stands should be rather more than shoulder width apart.
TASK	Subject takes off with the feet together, jumps over the cord and lands on one foot. Subject mus remain on the landing foot for 5 seconds without the other foot touching the ground. (A minor adjustment of the landing foot is permitted.) Both feet are tested. The stop watch should be started when the subject lands.
TRIALS	Give three for each leg. Record time of each trial.
SCORING	Indicate failure and assess time of 0: If subject does not take off with two feet togeth If subject does not land on one foot and maintain the position for 5 seconds.

THROW AND CATCH

EQUIPMENT	Tennis ball Scoring grid on Record Sheet
STARTING POSITION	Subject stands facing a smooth wall at a distance of 8 feet (mark with tape).
TASK	Subject throws the ball to hit the wall and catches it on the return with both hands. He must use an underarm throw. The ball must be caught clear of the body, not trapped against body or clothing. The tester should demonstrate the proper way to catch if the subject holds his hands too closed or too open, does not move his body or arms to meet the ball or commits some other error of technique. The tester should also show the child that the ball must be thrown high enough to give a good rebound. Success or failure should be entered on the grid after each attempt.
TRIALS	10 - Do all of them.

APPENDIX B

MOTOR PERFORMANCE RATING SCALE

APPENDIX B

INSTRUCTIONS FOR USE OF CHECKLIST

The purpose of this checklist is to identify children who have movement learning difficulties. A number of studies indicate that we can expect to find approximately 6% of school children who meet the following criteria of being physically awkward. We define physically awkward children as children without known neuromuscular problems (such as mild cerebral palsy) who fail to perform age-appropriate motor skills with acceptable proficiency. We realize that the basis for judging "acceptable proficiency" might change with different age groups, the sex of the child, and the particular socio-cultural environment. Nevertheless, we hope you will rate the child's performance on each behavioural statement in relation to the range of performances that you would expect to find in children of that particular age group and cultural milieu.

To help you with this task, we suggest that you use the scale illustrated in Figure 1. Therefore, you would rate a child's performance on an item in relation to how well he or she performed it in comparison to all the children you have taught in that particular age group. Thus, a child's performance in catching which was rated as being performed "very well" would mean that the child's typical performance would usually be better than 90% of his or her peers. In order to standardize the process, we suggest that you use the following procedures.

Rate each item individually. Consider the specific child and decide whether the child's typical performance would be performed very poorly, poorly, adequately, well, or very well in comparison to his or

her age group peers.

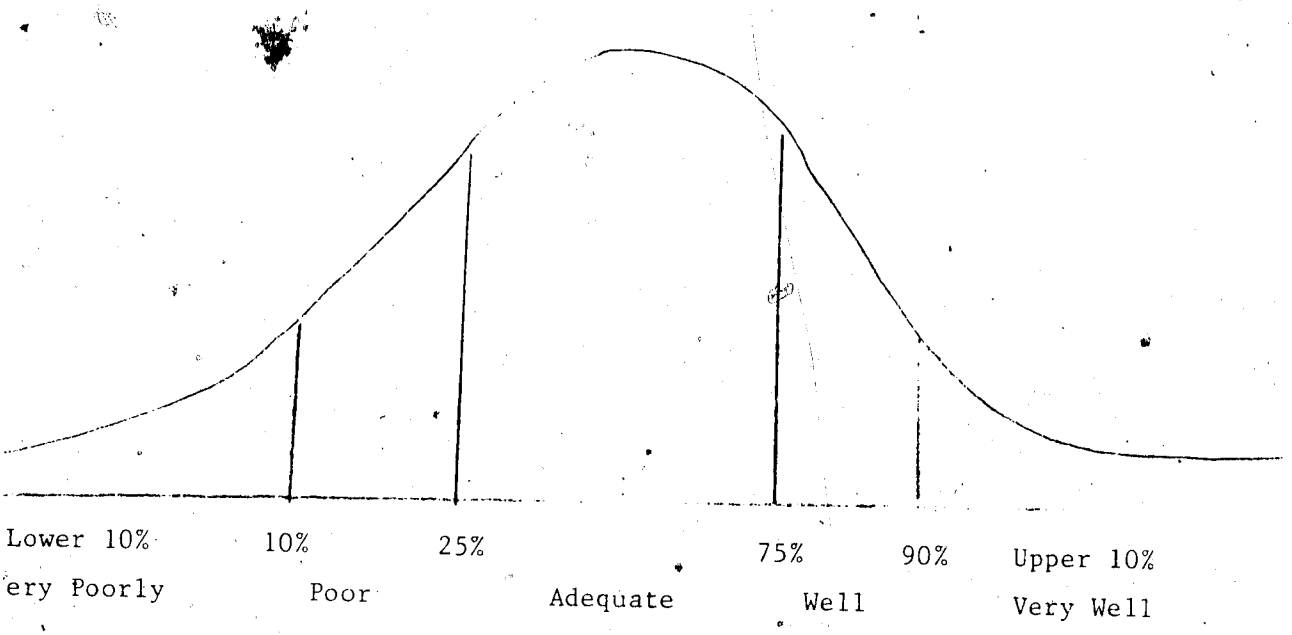


Figure 1

A child's performance could vary considerably between tasks. Therefore, we hope you will consider each item individually. Your judgment of a child's performance on each motor task should be based on your past experience with all children in that age group.

We assume that you will not have observed every motor behaviour that we have listed. If you have not actually observed the child performing the item, we would like you to place a P in the observation/ prediction column and then rate the child's performance using the following procedure. For these items we hope you will visualize the child performing that task and predict how well he or she would perform it and then rate it accordingly.

GROSS-MOTOR PERFORMANCE CHECKLIST
PHYSICAL EDUCATION DEPARTMENT
UNIVERSITY OF ALBERTA

Activity Items	Very Poorly	Poorly	Adequately	Well	Very Well	Prediction
1. The child demonstrates a controlled gait while performing locomotor skills.						
2. The child maintains body control in locomotor skills such as running, hopping and jumping.						
3. The child runs in a straight line for a distance of approximately 8 metres.						
4. The child changes direction while running in an obstacle course without markedly changing pace.						
5. The child keeps up to peers during running races.						
6. The child can move away from the ball quickly in games like dodge ball.						
7. The child changes direction readily in a running game like tag.						
8. The child skips forward 5 metres.						
9. The child can ice skate a distance of 25 metres.						
10. The child jumps forward over a 15 cm wide line marked on the floor keeping two feet together.						
11. The child jumps backward over a 15 cm wide line marked on the floor keeping two feet together.						

GROSS-MOTOR PERFORMANCE CHECKLIST
PHYSICAL EDUCATION DEPARTMENT
UNIVERSITY OF ALBERTA

Activity Items	Very Poorly	Poorly	Adequately	Well	Very Well	Prediction
22. The child keeps time to music when clapping.						
23. The child marches to a fast and/or slow beat.						
24. The child touches a tetherball as it moves around the pole.						
25. The child catches a tossed 20 cm playground ball at waist level with two hands.						
26. The child can catch a ball thrown 1 metre to either the right or left side of him or her.						
27. The child can catch a softball using a glove from a distance of 15 metres.						
28. The child catches a fly ball outside the diamond area in a game of softball.						
29. The child performs in key positions such as catcher, pitcher or first base in softball.						
30. The child bounces a 20 cm playground ball on the ground and catches it with two hands.						
31. The child bounces a 20 cm playground ball with one hand three times consecutively without losing it.						

GROSS-MOTOR PERFORMANCE CHECKLIST
PHYSICAL EDUCATION DEPARTMENT
UNIVERSITY OF ALBERTA

Activity Items	Very Poorly	Poorly	Adequately	Well	Very Well	Prediction
12. The child performs coordinated jumping jacks.						
13. The child performs a log roll (rolling over on the floor with the body stretched out).						
14. The child performs an independent front roll (sommersault).						
15. The child maintains balance while walking on a low bench approximately 20 cm wide.						
16. The child climbs a ladder using alternate hand-foot sequence.						
17. The child steps over a knee-high obstacle without knocking it over.						
18. The child ducks under a shoulder-high obstacle without disturbing it.						
19. The child maneuvers over and between objects of varying heights in an obstacle course.						
20. The child follows directions in "Simon Says."						
21. The child imitates the movement of another as in demonstrations and mirroring activities.						

GROSS-MOTOR PERFORMANCE CHECKLIST
PHYSICAL EDUCATION DEPARTMENT
UNIVERSITY OF ALBERTA

Activity Items	Very Poorly	Poorly	Adequately	Well	Very Well	Prediction
32. The child bounces a ball with one hand continuously without losing it.						
33. The child throws a 20 cm playground ball to the wall underhand and catches it after one bounce with two hands.						
34. The child throws a tennis ball underhand against the wall and catches it with two hands.						
35. The child throws the ball in front of a moving teammate so that the ball can be received.						
36. The child throws a frisbee to a partner.						
37. The child kicks a stationary ball.						
38. The child kicks the ball between goal posts.						
39. The child runs and kicks a ball without stopping before making contact with it (e.g., soccer ball).						
40. The child drops the ball and kicks it before it hits the ground.						

TEACHER QUESTIONNAIRE

	Strongly Disagree	Disagree	Agree	Strongly Agree
This child is physically awkward.				
This child should be referred for professional evaluation of his gross motor skills.				

How would you describe the quality of this child's performance in physical education classes as compared to his/her classmates?

APPENDIX C

HARTER PERCEIVED COMPETENCE SCALE

APPENDIX C

HARTER PERCEIVED COMPETENCE SCALE

What I Am Like

NAME _____ BOY OR GIRL (circle which) AGE _____ BIRTHDAY _____ CLASS OR GROUP _____

SAMPLE SENTENCES

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
a.	☐	☐	Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	☐	☐
b.	☐	☐	Some kids never worry about anything	BUT	Other kids sometimes worry about certain things.	☐	☐
1.	☐	☐	Some kids feel that they are very good at their school work	BUT	Other kids worry about whether they can do the school work assigned to them.	☐	☐
2.	☐	☐	Some kids find it hard to make friends	BUT	For other kids it's pretty easy.	☐	☐
3.	☐	☐	Some kids do very well at all kinds of sports	BUT	Others don't feel that they are very good when it comes to sports.	☐	☐
4.	☐	☐	Some kids feel that there are alot of things about themselves that they would change if they could	BUT	Other kids would like to stay pretty much the same.	☐	☐
5.	☐	☐	Some kids feel like they are just as smart as other kids their age	BUT	Other kids aren't so sure and wonder if they are as smart.	☐	☐
6.	☐	☐	Some kids have alot of friends	BUT	Other kids don't have very many friends.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
7.	☐	☐	Some kids wish they could be alot better at sports	BUT	Other kids feel they are good enough	☐	☐
8.	☐	☐	Some kids are pretty sure of themselves	BUT	Other kids are not very sure of themselves.	☐	☐
9.	☐	☐	Some kids are pretty slow in finishing their school work	BUT	Other kids can do their school work quickly.	☐	☐
10.	☐	☐	Some kids don't think they are a very important member of their class	BUT	Other kids think they are pretty important to their classmates.	☐	☐
11.	☐	☐	Some kids think they could do well at just about any new outdoor activity they haven't tried before	BUT	Other kids are afraid they might not do well at outdoor things they haven't ever tried.	☐	☐
12	☐	☐	Some kids feel good about the way they act	BUT	Other kids wish they acted differently.	☐	☐
13.	☐	☐	Some kids often forget what they learn	BUT	Other kids can remember things easily.	☐	☐
14.	☐	☐	Some kids are always doing things with alot of kids	BUT	Other kids usually do things by themselves.	☐	☐
15.	☐	☐	Some kids feel that they are better than others their age at sports	BUT	Other kids don't feel they can play as well.	☐	☐
16.	☐	☐	Some kids think that maybe they are not a very good person	BUT	Other kids are pretty sure they are a good person.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
17.	☐	☐	Some kids like school because they do well in class	BUT	Other kids don't like school because they aren't doing very well.	☐	☐
18.	☐	☐	Some kids wish that more kids liked them	BUT	Others feel that most kids do like them.	☐	☐
19.	☐	☐	In games and sports some kids usually watch instead of play	BUT	Other kids usually play rather than just watch.	☐	☐
20.	☐	☐	Some kids are very happy being the way they are	BUT	Other kids wish they were different.	☐	☐
21.	☐	☐	Some kids wish it was easier to understand what they read	BUT	Other kids don't have any trouble understanding what they read.	☐	☐
22.	☐	☐	Some kids are popular with others their age	BUT	Other kids are not very popular.	☐	☐
23.	☐	☐	Some kids don't do well at new outdoor games	BUT	Other kids are good at new games right away.	☐	☐
24.	☐	☐	Some kids aren't very happy with the way they do alot of things	BUT	Other kids think the way they do things is fine.	☐	☐
25.	☐	☐	Some kids have trouble figuring out the answers in school	BUT	Other kids almost always can figure out the answers.	☐	☐
26.	☐	☐	Some kids are really easy to like	BUT	Other kids are kind of hard to like.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
27	☐	☐	Some kids are among the last to be chosen for games	BUT	Other kids are usually picked first	☐	☐
28	☐	☐	Some kids are usually sure that what they are doing is the right thing	BUT	Other kids aren't so sure whether or not they are doing the right thing	☐	☐

APPENDIX D

HEIGHT/WEIGHT PROTOCOL

APPENDIX D

HEIGHT/WEIGHT PROTOCOL

1. Weight

Body weight should preferably be measured with a seica scale and recorded to the nearest 0.1 kilogram (kg). The person wears only light clothing (no shoes).

2. Standing Height

The person stands erect, arms hanging by the sides, feet together, heels in contact with the wall or other measuring device. The subject is instructed to stand as tall as possible and a gentle upward pressure is exerted on the mastoid processes as the person is asked to take a deep breath, and to look toward the horizon. A set square is placed on the head, depressing the hair to make firm contact, and a mark is made at the level of the lower border of the square on the wall or other recording instrument. The distance from the floor to the mark is then recorded.

APPENDIX E

FREE TIME LEISURE PURSUITS QUESTIONNAIRE

APPENDIX E

FREE TIME LEISURE PURSUITS QUESTIONNAIRE

OUTDOOR ACTIVITIES

Does your child:

	( ) Never	( ) Rarely	( ) Sometimes	( ) Frequently
1. Group				
Play games, hide and seek, tag				
Play softball				
Play ice hockey				
Play road hockey				
Have snowball fights				
Play soccer				
Individual				
Climb playground equipment				
Play with balls				
Skateboard				
X-country ski				
Ride a 2 wheel bike				
Climb trees				
Rollerskate				
Skip				
Low Skill				
Watch games				
Build snowmen				
Slide on ice				
Toboggan				
Play on swings				

INDOOR ACTIVITIES

Does your child:

	( ) Never	( ) Rarely	( ) Sometimes	( ) Frequently
2. Play cards				
Play board games				
Play with dolls				
Play with cars				
Play floor hockey				
Play video games				
Gymnastics				
3. Read				
4. Watch T.V.				

1. Does your child have any brothers or sisters? _____

2. Does your child usually play alone or with others? _____

Has your child ever participated in:

I. SOCIAL GROUPS

	Location	Child's Age	Comments
Sunday School			
Church Group			
Choir			
Beavers/Cubs/Brownies			
4H			
School Clubs			
School Monitor			
School Teams			

II. LESSONS

Swimming			
Dance			
Skating			
Music			
Art			
Skiing			
Horseback			
Gymnastics			

Has your child ever participated in:

III. MINOR SPORTS

	Location	Child's Age	Comments
T-Ball			
Softball			
Baseball			
Soccer			
Ringette			
Hockey			

IV. CAMPS

Summer			
Day			
Sports			

V. SPECIAL PROGRAMS

Gym and Swim			
Special Day Camp			

Has your child ever participated in:

VI. OTHER

Location	Child's Age	Comments