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# Gross Motor Skills Of Children With Learning Disabilities

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## ABSTRACT

*Many international studies have examined the gross motor skills of children studying in special schools while local studies of such nature are limited. This study investigated the gross motor skills of children with learning disabilities (LD; n=10 M age=09 years. SD= 0.66) with the Test of Gross Motor Development-3 (TGMD-3, Ulrich,2017). The test consists of 13 items divided into two sub tests (6 locomotor test items and 7 ball skills test items). The locomotor subtest includes run, gallop, hop, skip, horizontal jump and slide while the object control subtest includes two hand strike a stationary ball, one hand forehand strike, stationary dribble, kick, catch, overhand throw and underhand throw. Children score obtained, raw score transformed to standard score and percentile, the result showed that their gross motor performance is very poor according to descriptive ratings of TGMD-3 norm. The author suggests motor intervention and creative dance programme for the children with learning disabilities to improve their gross motor skills.*

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**Keywords :** Gross motor skill, children with learning disabilities, school children.

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## Introduction

As per the Rights of Persons with Disabilities Act, 2016”Specific learning disabilities” means a heterogeneous group of conditions wherein there is a deficit in processing language, spoken or written, that may manifest itself as a difficulty to comprehend, speak, read, write, spell, or to do mathematical calculations and includes such conditions as perceptual disabilities, dyslexia, dysgraphia, dyscalculia, dyspraxia and developmental aphasia. However, learning disabilities do not include learning

problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

A learning disability, or specific developmental disorder, is a disorder that inhibits or interferes with the skills of learning. Learning disabilities are life disabilities; they are seen in children as well as adults. The impairment may be so subtle that it may go undetected throughout the life. These disabilities create a gap between the true potential and day-to-day productivity and performance. The same learning disabilities that interfere with reading, writing and arithmetic interfere with cricket, football, getting dressed, keeping the room tidy and with every aspect of life. If an individual does not benefit from a regular education programme and is not socially disadvantaged, intellectually limited or pedagogically deprived and shows no evidence for hard sign of any disorder, then that individual is characterized as learning disabled. The child who has difficulty in expressing or understanding and cannot read, write or do mathematics within the criterion range as established per school norms is learning disabled.

### **Gross motor skills**

The development of gross motor skills begins during the critical years of early childhood. A child's ability to move effectively in space is important to future motor skill development (Bellows et al. 2013). Gross motor skills require children to use large musculature to produce actions like throwing, catching, and galloping. Children's ability to perform fine and gross motor skills may affect their participation in sport, physical education classes, general education classes, and social experiences on the playground. (Ting

Liu et al. 2015). Gross fundamental motor skills may be imperative to a child because it forms the building blocks of future physical activity (Clark and Metcalfe 2002; Wang 2004).

Motor dysfunctions have been associated with children with learning disabilities in observation and systematic study (Frauds, et al. ,1980). Children are required to show proficiency in a number of motor skills in the classroom, on the playground, and during physical education class during the elementary school years. Gross motor skills such as running, hopping, galloping, throwing, catching, striking, dribbling and kicking are required in sport and game activities. Fundamental motor skills provide the infrastructure for learning more complex games and sports skills which are beneficial in later life (Branta, Haubenstricker, & Seefeldt, 1984). Without these prerequisite skills, children may experience a high failure rate both in school and on

the playground. Fulsom- Meek et al. (1988) studies children with LD and children without LD between ages through 10 to 13 years on vision and static balance, they found that the children without LD could balance longer than children with LD.

The Gross Motor Skills of Children with Typical Development the Test of Gross Motor Development-2 (TGMD-2, Ulrich, 2000) has been used extensively to assess the motor performance of children with typical development. Internationally, Pollatou, Konstantina and Karadimou (2005) assessed the gross motor skills performance of 95 preschool children (50 girls, 45 boys; M Age = 5.4 years old) and revealed no gender difference.

It was reported that assessment tools such as the Test of Gross Motor Development-2 (TGMD-2; Ulrich 2000), the Peabody Developmental Motor Scales-2 (PDMS-2; Folio and Fewell 2000), and the Movement Assessment Battery for Children-2 (MABC-2; Henderson et al. 2007), were effective in identifying the presence of developmental delays in preschool children (Cools et al. 2008). Similarly, Logan et al. (2011) compared the MABC- 2 and TGMD-2 on their effectiveness to assess preschool children and concluded that both were effective in identifying motor delays.

Lieberman et al., (2004) investigated 29 children with HI (n = 27; 11 girls, 18 boys, M age = 6 years, age range: 4 – 9 years) using the TGMD (Ulrich, 1985). Lieberman et al. ,(2004) compared the motor development of children with HI who have non-hearing parents (n = 14) with those who have hearing parents (n = 15). The results revealed age as a significant factor for both locomotor and object control skills. In general, a higher percentage of children with HI had either reached or surpassed average performance levels in object control skills compared with locomotor skills.

Maloy and Sattler (1979) used the Modified Lincoln- Oseretsky Motor Development Scale (Bialer, Doll, &Winsberg, 1974) to measure the motor ability of boys, eight to eleven years old, 32 with and 32 without learning disabilities. Their results followed the same trend as Pyfer and Carlson (1972). This test requires an individual to perform a variety of motor tasks ranging from gross movements of the whole body to fine motor movements of the hand. Based upon total scores, boys with learning disabilities performed significantly poorer than the nondisabled boys. In addition, boys with learning disabilities also performed significantly below the normative values at each age level.

The predictive ability of the Test of Motor Impairment (Stott, Moyes, & Henderson, 1984) was considered by Sugden and Wann (1987). They evaluated a group of 30 children eight years of age and 31 children 12 years of age, all with moderate learning disabilities, and compared the results to 61 chronological age peers without learning

disabilities. The test consisted of four sections which involved manual dexterity, static balance, dynamic balance, and ball skills. At the eight year old level there were ten times as many movement problems in the group with learning disabilities.

This study aimed to understand the gross motor skills of children with learning disabilities and examine the differences in their motor performance as compared with the TGMD-3 norm population (Ulrich, 2017). This study is then be useful to stakeholders (i.e. Schools, Teachers, Educators, Counselors, Therapists, Parents, Caregivers) in the field of mainstream and special needs education as the data collected will also provide insights to the motor abilities of children with learning disabilities in special schools in Pune city.

## Method

Children in this study were selected from Phoenix school from prism foundation in Pune city. Children for test were obtained through a purposive sample technique. The subject sample were comprised of 10 children with learning disabilities eight through ten years of age. The identification of the children with learning disabilities was based on independent assessment of school authority. The parents of each child received a permission form. At the time of data collection they did not have an illness or injury. Permission was taken from the school authority and parent consent form were signed. Child with neuromuscular disorder, visual impairment or hearing impairment was excluded from the study.

**Table 1** : Age and Gender of children with learning disabilities (n=10)

min	max	mean	SD
08	10	09	0.66

## Instrument

In this study participant's gross motor performance were evaluated using the TGMD-3 locomotor subtest and ball skill. TGMD-3 examines the gross motor development of children with and without learning disabilities from age 3 years, 0 months to 10 years, 11 months (Ulrich, 2000). This test consists of 13 test items divided into two sub test (6 locomotor test items and 7 ball skill test items). The locomotor subtest includes run, gallop, hop, skip, horizontal jump and slide while the object control subtest includes two hand strike a stationary ball, one hand forehand strike, stationary dribble, kick, catch, overhand throw and underhand throw. The TGMD-3 instrument was selected for its reliability (large normative sample), suitability (same age group and gender

ratio) and short assessment duration (Ulrich 2000). Each test item includes four to five performance criteria to describe the performance qualitatively. Motor performance is observed and evaluated based on predetermined qualitative performance criteria that represent each TGMD-3 assessment item. Scores are determined for each respective criterion based on whether the criterion was fulfilled (score awarded=1) or not (score awarded=0) Ulrich 2016. Two trials are completed for each motor skill item and scored accordingly. The total score for each item is established by the summation of all accumulated to determine the total locomotor and ball skills. The maximum score a participant can obtain on the TGMD-3, for locomotor subtest, ball skills subtest and overall gross motor performance, is 46, 54 and 100 respectively (Ulrich 2016).

## **Procedure**

This testing sessions were completed in school during the PE lessons of the participants on the school ground. Prior to testing and data collection, rapport building with the participant, equipment set up according to TGMD-3 requirements were carried out to allow familiarization and to reduce anxiety amongst the children. TGMD-3 items were explained using verbal and physical demonstration twice for each motor skill of the test items before each trial. the participants were then given the chance to perform each skill twice in a sequence of run, gallop, hop, skip, horizontal jump and slide. The tester observed the performance of each participant and awarded score of '1' when the participant performed the test items accordingly to the performance criteria of the skill. A score of '0' was awarded when the participant did not meet the performance criteria of the skill. The duration of each subtest took no more than 30 minutes.

## **Data analysis-Result & Discussion**

### ***Age Equivalent & Chronological Age***

The results showed that the children with learning disabilities were performing below-norm for both object control and locomotor skills when compared with the age equivalents of the TGMD-3 normative sample (see Table 2). While the mean chronological age of all children with learning disabilities was 9 years, both their locomotor skills and ball skills showed that they were performing at an age equivalent of 3 years (see Table 2) Gender differences, although not the primary focus of this study both male and female present in this study. The descriptive ratings indicated that these children with learning disabilities were performing at very poor level for the 13 test items.

**Table 2** : Converting raw score of subtest to age equivalent ( $n=10$ )

Locomotor	Ball Skill	Total Score	Age equivalent	GMQ	Percentile	Descriptive rating
4.6	5.5	10.1	<3-0	2	<1	Very poor

## Conclusion

The findings of this study indicated that children with learning disabilities were very poor in locomotor skills as well as ball skills. They were lagging behind their age matched peers by approximately six years in terms of TGMD-3 test items. Gross motor skills play an important role in developing the child holistically. To improve the performance and develop the gross motor skill by providing them movement interventions in PE classes at the schools. This study, along with additional research of its kind, may be beneficial to creating intervention programs to improve the motor skills of children identified with motor delays. Early improvement of these developmental delays is imperative to the success of the child in classroom, playground and physical activity settings. The outcomes of this study suggest that the presence developmental delays in this are important to policy makers, caretakers, and physical educators. At present date, many states lack specific guidelines or objectives for amount of physical activity recommendations for school children. However, similar studies are beneficial in possibly identifying areas for policy makers. In addition, preschools, child cares, and Head Start programs would benefit from developing clear curricular objectives that focus on specific gross and fine motor competencies.

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