



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

ACTIVITY BASED INTERVENTION PROGRAMME A HOPEFUL REMEDY FOR MOTOR SKILL PROBLEMS OF CHILDREN WITH DYSPRAXIA IN STATIC ENVIRONMENT

Dr. Kuljinder Kaur, Principal, K.C. College of Education
Nawahshahr, Punjab

ABSTRACT

All individuals need properly functional Motor skills to conquer all areas of life. Proficiency is expected by everyone to enable the children to solve routine life problems using motor skills. Unfortunately, for some children these important skills are not mastered at an expected rate when compared with other children. A child with any degree problems in movement coordination and planning having average or above average Intelligence Quotient may be considered to have 'dyspraxia' and people are becoming aware of this condition. The goal of investigator was to understand the special subset of children who seem to have unusually severe problems in motor skills. Hence the study was an attempt on Activity Based Intervention Programme. A Hopeful Remedy for Motor Skill Problems of Children with Dyspraxia.

Keywords: Motor Skill, Dyspraxia, Activity based Intervention Programme, Static Environment

1. INTRODUCTION

Education is a process which facilitates acquisition of knowledge, values, skills, habits and personal development of an individual. Education for children with special needs (CWSN) has gained an acceleration in the interest and provision that is continuing to emerge in schools in India. With a much greater awareness in schools of conditions like dyslexia, dyspraxia and autism, and the effects they have in the context of educational curriculum, schools are becoming a better place to help children access curriculum that takes account of the diverse needs of its learners. It is a great challenge on the part of teachers and educational specialists to deal with such children with disabilities through the use of innovative educational strategies (Reddy, 2011). Reading, writing and mathematics are not the only learning areas and skills affected by learning disabilities but other types of learning disabilities are also there like difficulties with motor skills (movement and coordination), understanding spoken language, distinguishing between sounds, and interpreting visual information etc.

Dyspraxia is a learning disability that causes difficulty with patterns of movement and planning. It is also called motor learning disability. Dyspraxia mainly affects the movement and coordination of an individual. This learning disability does not change intelligence but it affects the learning ability of an individual. "The main problem here is that messages from the brain are not being reliably transmitted to the body" (The American Heritage Medical Dictionary, 2007). Dyspraxia has been recognized in the earlier

20th century. Since then dyspraxia has been described in different ways such as dyspraxia is a disorder of sensory integration, (Ayres, 1972). An impairment or immaturity of the organisation of movement is called as dyspraxia (The Dyspraxia Foundation, 2013), Dyspraxia is a difficulty with planning movements (Cermak, 1991) and children with dyspraxia are those who, in the absence of physical and/or neurological disorder, have difficulties in control and co-ordination of voluntary motor activity.

A motor skill is an intentional movement involving a motor or muscular component that must be learned and voluntarily produced to proficiently perform a goal-oriented task. Motor Learning is referred to the relatively permanent gains in motor skill capability associated with practice or experience (Schmidt & Lee, 2005). If we understand how movement skills are performed and learned, we are in better position to teach them (Henderson et al., 2007). Motor skills are the skills and actions that involve the movement of muscles in the body.

Hession (2014), Kareem (2015), Martin et al. (2016) and Pimenta et al. (2019) conducted studies on children with dyspraxia and revealed that interventions resulted in significant gains in the behaviours and motor skills of the dyspraxic children. Nordqvist (2017) conducted a study on children with dyspraxia and found that dyspraxia did not affect intelligence but it may cause learning problems. Silva (2017) and Santos and Ferracioli (2020) conducted a study to identify the prevalence rate and specific areas of dyspraxia in children and found 14.3% and 11.6% of prevalence rate respectively. McHale and Cermak (1992), Smith (1993) and Gonzalez et al. (2019) conducted a study to measure gross motor, fine motor and language development in children and revealed that both gross and fine motor skills helped in fostering language development from infancy period to the early childhood period.

About 10% of people have some degree of dyspraxia, while approximately 2% have it severely. If the average classroom has 30 children, there is probably one child with dyspraxia in almost each classroom (Jones, 2005). In addition to motor difficulties; children with dyspraxia may experience low self-esteem, social isolation and poor academic achievement. Dyspraxia may also affect behaviour. Therefore, dyspraxia may affect any or all areas of development may be physical, intellectual, social, emotional, sensory and language as well as may impair the normal process of learning (Udoh and Okoro, 2013). While education is the key to a bright future for children with special educational needs, there are many barriers. The informal discussion with teachers and experts in the field convinced the investigator that such a study may become an eye-opener for the teachers to recognise the increasing need for special training programmes for the differently-abled students. Therefore, a modest attempt is made to study the problems, assessment and management of dyspraxia in regular classrooms and to seek the suggestions of the experts regarding the measures that can be adopted for improving the motor performance of students with Dyspraxia.

2. OBJECTIVES OF THE STUDY

The objectives of the present study are:

- To identify the students with Dyspraxia at primary level.
- To study the effect of the activity-based intervention programme on motor skills of primary school students with dyspraxia in static environment.

3. HYPOTHESES OF THE STUDY

To achieve the objectives of the study, following hypotheses were formulated:

1. There exist no significant differences among the motor skills of students with dyspraxia of experimental group and control group before the implementation of activity based intervention programme in static environment.
2. There exists no significant difference among the motor skills of students with dyspraxia of experimental group and control group after the implementation of activity-based intervention programme static environment.

4. POPULATION AND SAMPLE

- **Population:** This study was conducted in only one district of Punjab namely Nawanshahr. The population of the present study consisted of all the students of Grade III studying in CBSE affiliated English Medium Public Schools of Nawanshahr.
- **Sample:** In the present study, initially the random sampling technique was used to select the schools. At the first stage, the investigator selected four CBSE affiliated English Medium Public Schools from Nawanshahr district randomly. Further, the purposive sampling method was used by the investigator to identify the Dyspraxic children.

5. TOOLS USED

Following tools were used to collect the data:

- Raven’s Standard Progressive Matrices (SPM)
- Teacher’s Referral Form developed by the researcher.
- MABC-2 (Movement Assessment Battery for Children-2) Checklist

6. DESIGN OF THE STUDY

In the present study, the pre-test post-test control group design was used.

Experimental Group	Measures	Control Group
Pre-Test	MABC-2 Checklist	Post-Test
Intervention	50 days Activity Based Intervention Programme on Motor Skills	No Treatment
Post-Test	MABC-2 Checklist	Post-Test

Following were the four operational stages in the study:

1. Identification
2. Pre-Testing Stage
3. Intervention Stage
4. Post- Testing Stage

Stage 1: Identification Stage

The purpose of Identification and Pre-Testing Stage was to identify the students with ‘dyspraxia’. This stage included the following phases:

- **Phase I:** Screening the students having problems with motor skills on the basis of Teacher’s Referral Form.
- **Phase II:** Assessing the level of Intelligence Quotient of referred students on the basis of Standard Progressive Matrices (SPM).
- **Phase III:** Identification of Dyspraxic Students

On the basis of above criteria of identification of dyspraxic students, the description of prevalence rate of dyspraxia among the primary school students is given in the following table:

Table -1
Prevalence Rate of Dyspraxia

Total No. of Students in Grade III	Students Referred by the Class Teacher	No. of Dyspraxic Students	Percentage of Dyspraxic Students
496	105	62	12.5

The result of this stage shows that the prevalence rate of dyspraxia among Grade III students is 12.5% which is above the rates of prevalence found in most of the related studies. Meachon (2018) concluded that dyspraxia is a condition prevalent in approximately 10% of the main population of the United Kingdom. According to Gibbs et.al. (2007) dyspraxia is a hidden problem. The estimated prevalence rate is approximately 10%. Sayammagaru (2017) concluded that this problem of dyspraxia affects about 6-10 % of all children. The prevalence rate of dyspraxia is greater than 6-10% because many children with symptoms have never been officially diagnosed.

Stage 2: Pre-Testing Stage

Identification of students with dyspraxia was followed by formation of experimental and control groups, the next stage was to compare the motor skills performance of students of both the groups. It was compared on MABC-2 Checklist to find out whether there was any significant difference between the mean performances of both the groups. The scores of MABC-2 obtained during the identification phase were taken as pre-test scores.

Comparison of Mean Scores of various Movement Areas of Motor Skills of Experimental and Control Groups in Static Environment (Pre- Testing) The significance of difference between the pre- test mean scores of various movement areas of motor skills of students of the experimental group and control group were calculated. Results are shown in the table 2.

Table - 2

Significance of Difference between Mean Scores of various movement areas of Experimental Group and Control Group on MABC-2 Checklist in Static Environment (Pre-Testing)

Area	Group	N	Mean	S.D.	t- value	Level of Significance
Self-Care Skills	Experimental Group	30	7.53	1.92	0.07*	*Not Significant at 0.05 level
	Control Group	30	7.56	1.43		
Class Room Skills	Experimental Group	30	10.23	2.42	1.16*	*Not Significant at 0.05 level
	Control Group	30	9.57	1.91		
Recreational Skills	Experimental Group	30	8.9	2.77	1.42*	*Not Significant at 0.05 level
	Control Group	30	8.03	1.85		

Table 2 illustrates that the means of scores for self – care skills of experimental and control groups before implementation of intervention programme in static environment are 7.53 and 7.56 respectively and standard deviations are 1.92 and 1.43 respectively. The obtained ‘t’ value is 0.07 indicating a non-significant difference in self – care skills of experimental and control group before the implementation of Activity Based Intervention Programme. Further, the means of scores for class room skills of experimental and control groups in static environment during pre-testing are 7.53 and 7.56 respectively and standard deviations are 2.42 and 1.91 respectively. The obtained ‘t’ value is 1.16, which is less than the t-value at 0.05 level, indicating a non-significant difference in class room skills of experimental and control groups before the implementation of Activity Based Intervention Programme. Also, the means of scores for recreational skills of experimental and control groups in static environment are 8.9 and 8.03 respectively and standard deviations are found to be 2.77 and 1.85 respectively. The obtained ‘t’ value is 1.42 indicating no significant difference in recreational skills of experimental and control groups before the implementation of Activity Based Intervention Programme. This indicates that before the implementation of Activity Based Intervention Programme, there exists a non-significant difference in motor skills of the students with dyspraxia in static environment. Graphical representation of self- care skills, class room skills and recreational skills is given below in the figure 1A.

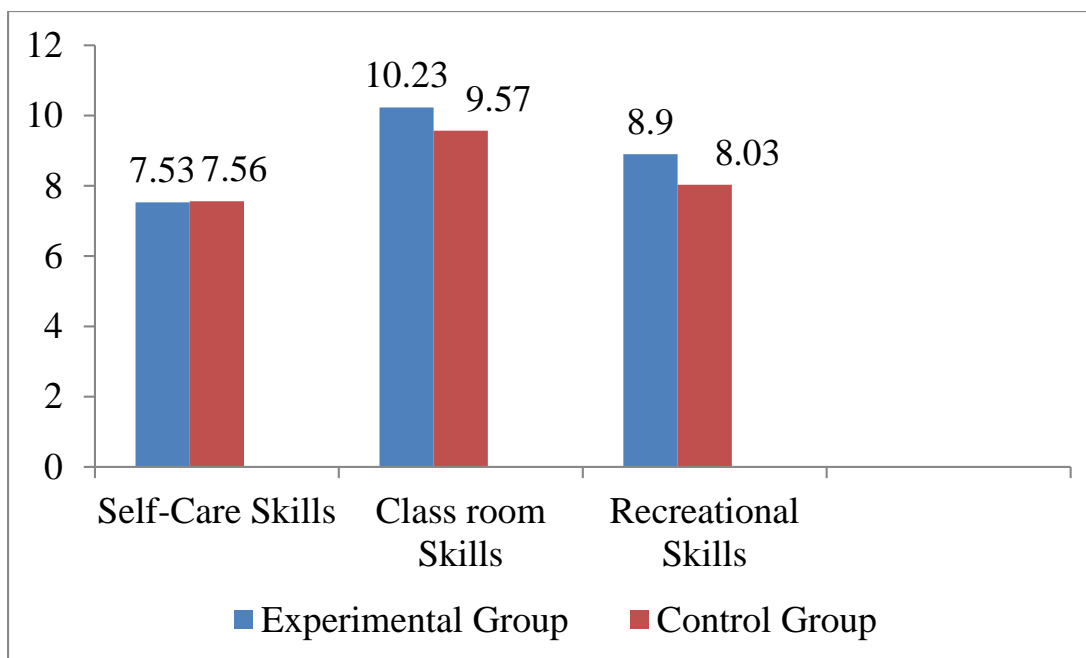


Figure – 1A: Means of Pre- test scores of various Movement Areas of Motor Skills of Experimental and Control Groups in Static Environment on MABC-2 Checklist

Stage 3: Intervention Stage

After pre-testing stage, the investigators developed and implemented the ‘Activity Based Intervention Programme’ for improving motor skills of students with dyspraxia in static environment. The duration of the whole programme was 50 days. The experimental group was taught through this activity based intervention programme for Gross and Fine Motor Skills in static environment. This programme comprised of different activities based on various remedial strategies. The duration of each activity was not fixed. Different instructional strategies and various kinds of study materials, sports materials as well as other daily routine materials were used during the sessions.

Stage 4: Post-testing Stage

After the completion of the intervention programme, the following tests were re-administered to the experimental group and control group to study the effectiveness of Activity Based Intervention Programme on motor Skills of the students with dyspraxia in static environment.

Significance of Difference between Mean Scores of various movement areas of Experimental Group and Control Group on MABC-2 Checklist in Static Environment (Post-Testing)

Table 3

Area	Group	N	Mean	S.D.	t- value	Level of Significance
Self-Care Skills	Experimental Group	30	3.73	1.41	10.52	significant at 0.01 level
	Control Group	30	7.5	1.35		
Class Room Skills	Experimental Group	30	5.72	1.44	8.46	significant at 0.01 level
	Control Group	30	8.97	1.45		
Recreational Skills	Experimental Group	30	5.17	1.39	6.37	significant at 0.01 level
	Control Group	30	7.83	1.82		

Table 3 illustrates that the post-test mean scores of self – care skills of experimental and control group in static environment are 3.73 and 7.5 respectively and standard deviations are 1.41 and 1.35 respectively. The obtained ‘t’ value is calculated as 10.52 indicating a significant difference in self – care skills of experimental and control group after the implementation of activity based intervention programme. Further, the mean scores for class room skills of experimental and control group in static environment after the intervention programme are 5.72 and 8.97 respectively and standard deviations are 1.44 and 1.45 respectively. The obtained ‘t’ value is found to be 8.46 indicating a significant difference in classroom skills of experimental and control groups after the implementation of activity based intervention program. The post test mean scores of recreational skills of experimental and control group in static environment are 5.17 and 7.83 respectively and standard deviations were 1.39 and 1.82 respectively. The obtained ‘t’ value is 6.37 indicating a significant difference in recreational skills of experimental and control groups after the implementation of activity-based intervention programme. This indicates that the activity-based intervention programme leads to significant improvement in motor skills of the students with dyspraxia in static environment. Graphical representation of comparison of post-test mean scores of self-care skills, class room skills and recreational skills of both the groups is presented in the figure 1B.

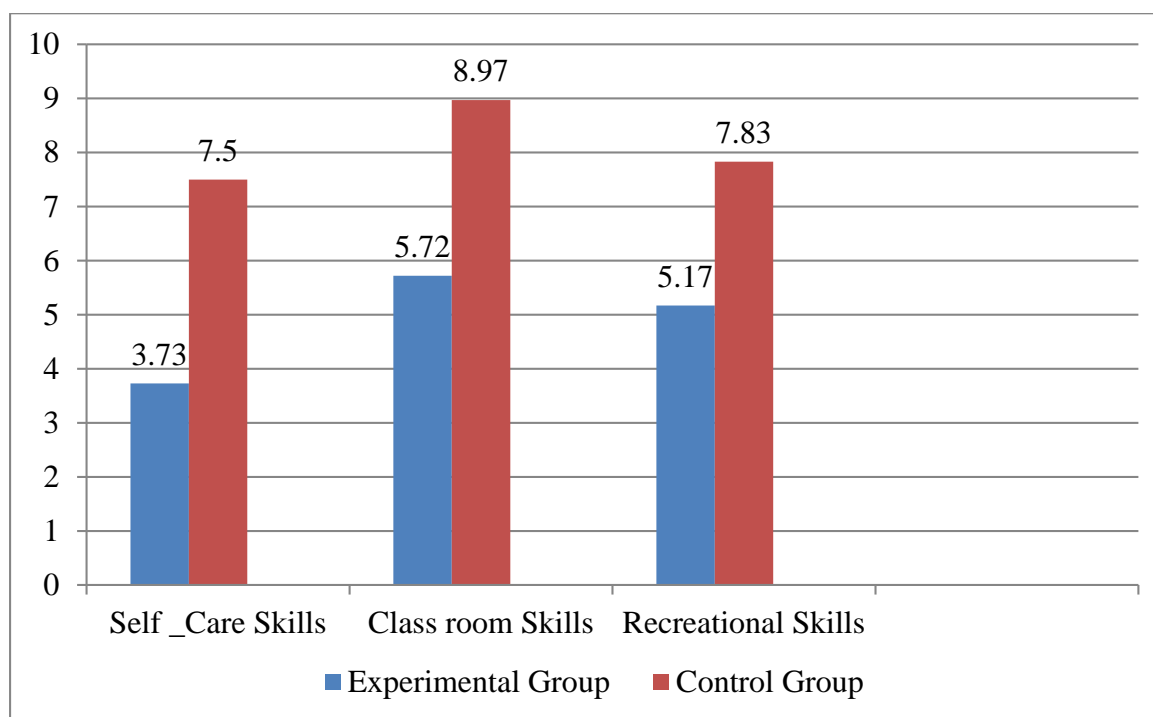


Figure – 1B: Comparison of mean scores of various Motor Skills of Experimental and Control Group in Static Environment on MABC-2 Checklist (Post Testing)

Findings:

The findings of the present study shows that the motor skills performance of the students of experimental group has improved. The reason may be that the activities planned for the Motor Skills were related to their day to day life experiences and the students were involved in the various physical activities, self-care, various class activities and recreational activities etc. during the intervention programme but in the static environment. Many studies support the results of the present study. Jackson (1999) suggested that ‘Sensory Stimulation Protocol’ had an effect on the Motor Skills of the students with dyspraxia. He suggested the intervention focusing on the ability of the subjects by teaching strategies that facilitate the motor plans. Similarly, Revie and Larkin (1993) did a study on children with poor motor coordination and administered Task – Specific Intervention on these children with poor motor skills. The experiment resulted in significant gain for all the groups. Also, in a study conducted by McGlashan et al. (2017) on children of age group 8 to 10 years, the students in the intervention group showed improved manual dexterity on MABC-2 and children in the control group showed no improvement in the manual dexterity on MABC-2.

Conclusion:

Motor skills problems are common. Dyspraxia was thought to be incurable but fortunately, early diagnosis, educational support and required treatment can help the affected individual overcome their motor skills problems. In a nutshell, it is evident from the results that activity-based intervention programme has helped the students with dyspraxia in enhancing motor skills in the static environment.

REFERENCES

- Adams, J.A. (1976). *Issues for Closed- Theory of motor learning. Motor control: issues and trends*. New York: Academic Press.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders (DSM IV)*. Washington, DC: APA.
- Ayers, A.J., Mailoux, Z.K., & Wendler, C.L.W. (1987). Dyspraxia : Is it a Unitary Function? *Occupation, Participation and Health*, 7(2), 93-110.
- Ayres, A.J. (1965). *Sensory Integration and the Child*. Los Angeles: Western Psychological Services.
- Ayers, A.J. (1972). *Sensory integration and learning disorders*. Los Angeles: Western Psychological Services.
- Balamurali, V. (2009). *Fundamentals and Principles of Ophthalmology*. American Academy of Ophthalmology.
- Barr, (1974). A study of Auditory Perceptual Disorders in Children with reference to Language Learning. *NCERT, New Delhi*.
- Bartz, A.S. (1989). A study in the use of writing and self-monitoring strategies with learning disabled. *Abstracts International*, 50 (9), 2857-A
- Brown, D. (1994). Dyspraxia: the Forum. *Midline*, 18,9.
- Cermak, S.A. (1991). *Somatodyspraxia Sensory Integration: Theory and Practice*. Philadelphia: F. A. Davis.
- Chu (1987). *Sensory and Motor Obstacles in Learning*. Gerrards Cross: Dyspraxia Trust.
- Cole, K.B. (1992). Efficacy of generalization of instruction in sequential expository writing for students with learning disabilities. (Doctoral dissertation, Northern Illinois University, 1992). *Dissertation Abstracts International*, 53, (7) 2326-A.
- Cornhill & Smith (1996). Factors that relate to good and poor handwriting. *American Journal of Occupational Therapy*, 50, 732-739.
- Coronado & Marco (1995). The Anxiety of Learning – Disabled School Children with Remedial Instruction. *PhD Thesis Indian State University*.
- Dowing et al. (1990). Regular and Special Educators Perceptions of Non- Academic Skills Needed by Mainstreamed Students with Behavioral Disorders, 15, 217- 226.
- Emmanuel, A. (1996). Teacher Who Make a Differences. *The Hindu, III, June 20*.
- Garrett & Woodsworth, R. S. (1981). *Statistics in Psychology and Education*. Vakkils, Feffer and Simons Ltd., Bombay.
- Gibbs, D. P., & Cooper, E. B., (1989). Prevalence of Communication Disorders in Students with Learning Disabilities. *Journal of Learning Disabilities*, 22, 60 – 63.
- Gibbs, J., Appleton, J. & Appleton, R. (2007). Dyspraxia or Developmental Coordination Disorder ? Unraveling the Enigma. *Archives of Disease in Childhood*, 92 (6), 534 – 539.
- Hammill et al. (1981). A New Definition of Learning Disabilities. *Learning Disability Quarterly*, 4, 336 – 342.
- Henderson, S., Sugden, D. & Barnett, A.L. (2007). *The Movement Assessment Battery for Children Second Edition (MABC-2)*. London: Psychological Corporation
- Henry & Garrett. (1966). *Statistics in Psychology and Education*. David McKay Company, Inc. and Longman Group Ltd. *International Journal of Special Education*, 29(2), 92.

- Hession, C.E., Eastwood, B., Watterson, D. Lehane, C.M., Oxley, N. & Murphy, B.A.(2014). Therapeutic horse riding improves Cognition, Mood Arousal and Ambulation in children with Dyspraxia. *The Journal of Alternative and Complementary Medicine*, 20(1), 19-23.
- Jackson, T. (1999).Dyspraxia : Guidelines for Investigation. *British Journal of Occupational Therapy*, 62 (7), 321- 326.
- Jones (2005).Developing School Provision for Children with Dyspraxia:A practical Guide.PaulChapman:London
- Joy & Waller (1997). *Day to Day Dyslexia in Classroom*.Routledge, London and New York.
- Kareem,J. (2015). Effectiveness of Activity Based Program in Enhancing Fine Motor Skills of Children with Dyspraxia. *International Journal of Multidisciplinary and Allied Sciences*,5(2).
- Kirk.S. (1963). Proceedings of the Annual Meeting of the Conference on Exploration into the Problem of the Perceptual handicapped Child. *Vol. 1, Chicago*.
- Lewis, W. (1995. London: Routledge.
- Lovitt, T. C. (1989). *Introduction to Learning Disabilities*. Boston: Allyn and Bacon.
- Mangal, S.K. (2015).*General Psychology*.JBA Publishers.
- McCormick, (1968).Improvement in Reading Achievement Through Perceptual-Motor Training.
- McGlashan and Holmes (2017). Improvement in Children's Fine Motor Skills following a Computerised Typing Intervention. *Human Movement Science*, 56(13), 26-36.
- McHale, K. & Cermak, S.A. (1992). Fine motor activities in elementary school: preliminary findings and provisional implications for children with fine motor problems. *The American Journal of Occupational Therapy*, 46(10), 893- 903.
- Meachon (2018). An Investigation of Dyspraxia: What We Know and Why the Research Is SO Far Behind?.[http:// st-annes-mcr.org.uk/staar/-issue 7](http://st-annes-mcr.org.uk/staar/-issue 7).
- Milloy(1993). What is this thing called dyspraxia. *Midline*, 13, 22-23.
- Ministry of human Resource Development.(1986). National Policy on Education.Govt.of India, New Delhi.
- Narang & Gupta (2014). The effect of Multimodal Remedial Techniques of the Spelling Ability of Learning Disabled Children. *International Journal of Special Education*, 29(2).
- National Policy on Education (1986). Ministry of Human Resource Development, Government of India, New Delhi.
- Nonis et.al.(2014). The Gross Motor Skills of Children with Mild Learning Disabilities.
- Nordquist(2016).What is Dyspraxia? <https://www.medicalnewstodard.com>.
- Norton. Panda (1997).*Elements of Child Development*. New Delhi ,Kalyani Publishers.
- Orton, S. T. (1937). Reading, Writing and Speech Problems in Children. New York.
- Reddy, C. (2011). Inaugural address-Environmental Education and Teacher Development: engaging a dual curriculum challenge. *South African Journal of Environmental Education*, 28, 9-29.
- Revie, G. & Larkin, D. (1993). Task specific intervention with children reduces movement problems. *Adapted Physical Activity Quarterly*, 10(1), 29-41.
- Piek (2006). The relationship between fine and gross motor ability, self-perceptions and selfworth in children and adolescents. *Human Movement Science* , 25, 65-75
- Pimenta, R.A., Poeta, L.S., basso, L., Mariano, M. & RosaNeto, F. (2019). Association between specific areas of development and dyspraxia in preschool children. *Medical International Journal*, 10, 10.
- Ruth, R. (2000) Awareness on learning Disabilities among Regular School Teacher. Unpublished M.Ed. Dissertation, Avinashilingam Deemed University, Caimbatore.

Sayammagaru, S. (2017). *Dyspraxia*. Retrieved from <https://www.medindia.net>dysp>.

Schmidt, R. A. & Lee, T. D. (2005). *Motor control and learning: A behavioral emphasis, (4th edition)*. Human Kinetics.

Smith, J.D. (1996). *Spotlight on Special Educational Needs; Specific Learning Difficulties*. Nasen Enterprises Ltd. England and Wales.

Smith, J.C. (1993). *Fine Outcomes in Preschool Children Who Receive Occupational Therapy Service*. *American Journal of Occupational Therapy*, 50.

Stalling & Loretta (1973). *Motor Skills: Development and Learning*. Boston : WCB/MC Graw- Hill.

Sugden & Write (1995). *Helping Your Child with Movement Difficulties*. Leeds: University of Leeds.

Sunita (2017). *Dyspraxia*. <https://www.medindia.net>.

The Dyspraxia Foundation. (2013). *Dyspraxia in Children*. www.dyspraxiafoundation.org.uk.

Udoh, N.A. & Okoro, C.C. (2013). *Developmental Dyspraxia – Implications for the Child, Family and School*. *International Journal of Academic research in Progressive Education and Development* 2(4), 200-2014.

Vuijit, P.J., Hartman E., Mombarg, R., Scherder, E., & Visschert, C. (2011). *Association Between Academic and Motor Performance in a Heterogeneous Sample of Children with Learning Disabilities*. *Journal of Learning Disabilities*, 44(3), 276-282.

