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Correlation and effectiveness of coordination exercise and activity of daily living in differently able children

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ABSTRACT

Eye-hand coordination abilities are an integral part of a Child's development. Eye-hand coordination is necessary for functional independence progress and its effects on the activity of daily living. This study is aimed at the effectiveness of coordination exercise on the activity of daily living and correlation between coordination exercise and activity of daily living. Total 20 children (7 Female, 13 Male) age group 10 to 15 years with different disabilities situated around Anand. Developmental Coordination Questionnaires (DCDQ) was used for assessment of coordination skill. Functional Independence Measure (FIM) was used for evaluating the activities of daily living. The coordination exercise program was effective for the activity of daily living indifferently able children. Coordination exercise was positively associated with Activity of daily living. Coordination has an effect on Activity of daily living. After the coordination exercise program the child improved his/her Coordination skill. Coordination exercises are effective on the activity of daily living indifferently able children.

Keywords— *Coordination, Activity of daily living, Functional independence measure, Differently able children*

1. INTRODUCTION

Different disabilities such as Mental Retardation, Cerebral Palsy, A.D.H.D, Autism, Learning disabilities, Down's Syndrome having commonly difficulty in the activity of daily living[1]. Occupational therapy helps adults and children maximize their function, adapt to their limitation and live as independently as possible[2, 3]. Children with different abilities show difficulties in planning, organizing and performing strategies. Motor skill may be affected by poor coordination skill. Poor Coordination is affected the person's functional level and activity of daily living.

Hand-eye coordination is the ability of vision and function system to coordinate the information received through the eyes control guide and direct the hands in accomplish given of task such as buttoning- unbuttoning and any other daily living activities. Coordination uses the eye to direct attention and the hand to execute a task. Fine motor skills involve a task that requires for performing of Coordination activity. Children with various conditions find dressing difficult because of the coordination[4]. Children with developmental coordination disorder can have difficulties completing dressing because of slowness and disorganization. Due to lack of coordination, children having a problem to zip trousers, tie shoelaces, Buttoning and unbuttoning of shirts. Differently able children have difficulty in dressing due to incoordination of movement. Hand-eye coordination is defined as the use of the eyes to direct muscles towards a task such as eating, buttoning, unbuttoning bathing, brushing hair.

Eye-hand coordination is necessary for a variety of daily routine activities[5]. Poor eye-hand coordination accompanies many syndrome and conditions such as autism spectrum disorders cerebral palsy, decreased muscle tone[6]. Many children with developments delays also demonstrate poor eye-hand coordination. Poor eye-hand coordination often presents itself as an avoidance or refusal to participate in many ordinary daily activities. Children with poor eye-hand coordination for example typically have difficulties learning handwriting skill other skills like dressing, taking care of one's personal hygiene[7].

Most children with eye-hand coordination difficulties benefit from one to two sessions weekly with an occupation therapist, children are motivated to participate in challenging eye-hand coordination task. Eye-hand coordination difficulties can be treated through strengthening both the fine muscles of the hands and eyes and the neural pathways that connect visual information with hand movements. Additionally, because eye-hand coordination is often accompanied by other fine and gross motor deficits, developing eye-hand coordination skills will likely also contribute to the strengthening of all motor capabilities[8]. Children with a wide variety of type's disabilities are likely to have difficulty with hand function. These disabilities include cerebral palsy [9, 10].

DCD [11] As. Mandich et al. noted, "Incompetence in everyday activities [has] serious negative effects for children" [11]. Different Coordination Activities can use for the improving hand and coordination skills.

2. MATERIALS AND METHODS

It is a Quantitative observational Study**.** The randomized sampling method was used. The study was conducted in Smt. Kamlaben P. Patel Institute of Physiotherapy and Occupational Therapy Anand, Community-dwelling differently able children (In and around Anand), Maitry Sanstha. (Nadiad)

2.1 Procedure

All the subjects who were willing to participate were interviewed for their Demographic Data such as Name, Age, Sex, Diagnosis, Address, contact number. 20 children with different disabilities ranging in age from 10 years to 15 years and children's parents /caregivers participated in this study. 13 boys and 7 female were included.

2.2 Instrumentation

2.2.1 The Developmental Coordination Disorder Questionnaire2007 (DCDQ): Scientific information and evidence on the use of the questionnaire refers to the DCDQ'07, although the questionnaire known as "Coordination Questionnaire" [12]. The Developmental Coordination Questionnaire (DCDQ) is a parent report measure developed to assist in the identification of Developmental Coordination Disorder in children. Parents are asked to compare their child's motor performance to that of his/her peers. It provides a standard method to measure a child's coordination with everyday functional activities. As reported in 2000[13], the internal consistency of the DCDQ is high and result from discriminate function analyses were appropriately strong for the screening tool. The DCDQ'07 consists of 15 items, which group into three distinct factors. The first factor contains a number of items related to motor control while the child was moving, or while an object was in motion, and is labelled "Control during Movement". The second factor contains "Fine Motor and Handwriting" items and the third factors relates to "General Coordination". It's taken 10 to 15 minutes. The DCDQ is a succinct and useful measure for use by occupational therapist[13].

2.2.2 Functional Independence Measure: The functional independence Measure (FIM) scale assesses physical and cognitive disability[14]. This scale focuses on the burden of care- that is the level of disability indicating the burden of caring for them. Items are scored on the level of assistance required for an individual to perform activities of daily living. The scale includes 18 items, of which 13 items are physical domains based on the Barthel Index and 5 items are cognition items. Each item is scored from 1 to 7 based on the level of independence, where 1 represents total dependence and 7 indicates complete independence. The scale can be administrated by a physician, nurse and therapist. Possible score range from 1 to 126, with a higher score indicating more independence. Alternatively, 13 physical items could be stored separately from 5 cognitive items. It takes 1 hour to train a rater to use FIM scale, and 30 minutes to score the scale of each patient.

Clinical Application: The FIM scale is used to measure the patient's progress and assess rehabilitation outcomes. This is useful in the clinical setting of rehabilitation. Reliability: Overall reliability is excellent for the total FIM (ICC=0.96), The FIM motor scale (ICC=0.90-0.96) and the FIM cognitive scale (ICC=0.91-0.98) ICC means interclass correlation coefficient. DCDQ questionnaires consist of Coordination activities. And Functional Independence Measure consists for Activity of daily living.

Intervention: Planned for the coordination activities programmed based on eye-hand coordination. Evaluated all children. The coordination activities were applied for one month, everyday session for 30 minutes. Coordination activities were as follow:

1. Pegboard Activity,
2. Ball throwing and catching activity,
3. Stringing Beads Activity,
4. Therapy putty Activity,
5. Building blocks activity.
6. Stringing ring activity.

3. RESULT AND ANALYSIS

The data were fed into the computer in Microsoft Excel, for statically analysis, SPSS (Statistical Package for Social Science) software used. The descriptive statistics (frequency table, mean, standard deviation, standard error) were calculated to get first look for data. Paired t' test was used to compare mean values of a variable between two data; Pearson's correlation was used to test the relationship.

Table 1: Descriptive characteristics of the child

Characteristics	Child	Sex
Mean Age (Years)	13.5	13 Male
		7 Female
Standard Deviation	1.58	

Table 2: Analysis of PRE and POST tests of DCDQ and FIM

Scale	Mean	Standard Deviation	Standard Error	Pearson Correlation	P(T<=t) two-tail 5% of LOS
Pre DCDQ	59.85	7.65	1.71	0.9922	1.834
Post DCDQ	62	8.02	1.79		
Pre FIM	106.55	16.57	3.70	0.9974	2.606
Post FIM	108.65	16.82	3.76		

Table 3: Analysis of POST DCDQ and POST FIM

Scale	Mean	Standard Deviation	Standard Error	Pearson Correlation
Post DCDQ	62	8.02	1.79	0.86
Post FIM	108.65	16.82	3.76	

4. DISCUSSION

Descriptive characteristics of this subject are total number 20 mean age is 13.5±1.58 years. In this study include patient age is 10 to 15 years. Children in this study with different disabilities and who had normal vision and hearing. The study aims to evaluate the correlation and effect of coordination exercise and activity of daily living indifferently able children. Those have difficulties in daily living activities causes of lack of coordination skills. When looked at results all parameters scores were increased. Table no 2. Shows that the after coordination exercise programs children's coordination skill improves as well as POST FIM scale also improve. So here in this study found that coordination exercise effect on the activity of daily living. The mean values of Pre to Post DCDQ shows improvement (mean 59.85 to 62). The Mean value of Pre to Post FIM shows also an improvement (mean 106.55 to 108.65). Pre DCDQ and POST DCDQ Pearson correlation value is 0.9922 and Pre FIM and POST FIM Pearson correlation value is 0.9974 it shows significant improvement. Coordination exercise program for 4 weeks every day 30 minutes session showed a significant increase in coordination skill as well as the activity of daily living. Table no 3. shows that the after coordination exercise program Post FIM scale increases so Activity of daily living is highly correlated with the coordination exercise in differently able children. So, in this study found that the Coordination Exercise effect is improving the Functional level of the children. The activity of daily living is correlated with the Coordination exercise.

5. CONCLUSION

Coordination exercise program effective for coordination skills. After the coordination exercise program child improves his/her coordination skill. Coordination exercises also effective on the activity of daily living indifferently able children. Coordination ability is necessary for the task of daily routines. Quantitative results showed, increase in performance and satisfaction scores.

6. REFERENCES

[1] Wilmshurst, Linda (2012) "general+learning+disability" clinical and educational child psychology an ecological – Transactional approach to understanding child problem and Intervention."
[2] Hansen, Ruth A; Atchison, Ben (2000). Conditions in Occupational Performance. Hager showed, MD: Lippincott Williams and Wilkins. ISBN 0683-30417-8
[3] Crepeau, Elizabeth Blaisdell, Willard, Helens Spackman, Clare s; Neisladt, Maureen E (1998). Willard and Spackman's occupational therapy. : Lippincott-Raven Publishers ISBN 0-397-55192-4
[4] Rosenbaum, P; paneth, N.S Leviton, A Goldstein, M; Bax, M; Damiano, D; Dan, B Jacobsson, B(2007). "A report: The definition and classification of cerebral palsy, April 2006. "Development Medicine and Child Neurology.
[5] Hansen, Ruth A; Atchison, Ben (2000). Conditions in Occupational Performance. Hager showed, MD: Lippincott Williams and Wilkins. ISBN 0683-30417-8
[6] Jane Case-smith and Jane Clifford O Brien. ' Occupational therapy for children: Sixth edition:10:291-292
[7] Weijerman, ME; de Winter, JP (Dec 2010). "Clinical practice. The care of children with Down syndrome." European journal of paediatrics 169 (12): 1445–52.
[8] Shruti Nadkarni, Sumi S, Deena Ashok(2012) Enhancing Eye-Hand coordination with therapy intervention to improve visual-spatial abilities using 'The Re-training Approach' in children with Down Syndrome. Doi.10.5463/DCID.v23i2.8
[9] Fedrizzi, E., Pagliano, E., Andreucci, E., Oleari, G (2003). Hand function in children with hemiplegic cerebral palsy Prospective follow up and functional outcome in adolescence Developmental medicine and Child Neurology, 45, 85-91.
[10] Hanna, s. E., M. C. Rosenbaum, P.L., king, G.A., Walter, S.D., Pollock, N. et al. (2003). Development of hand function among children with cerebral palsy: Growth curve analysis for ages 16 to 70 months. Developmental medicines and child neurology, 47, 363.
[11] Mailoux, Z. (2006). Goal writing. In S. Smith Roley, & R. Schaaf (Eds), SI: Applying clinical reasoning to practice with a diverse population(pp63-70)
[12] Wilson, B.N., Crawford, S.G., Green, D., Roberts, G., Aylott, A., & Kaplan, B. (2009). Psychometric Properties of the Revised Developmental Coordination Disorder Questionnaire. Physical & Occupational Therapy in Pediatrics, 29(2):182-202.
[13] Wilson BN, Kaplan BJ, Crawford SG, Campbell A, Dewey D. (2000) Reliability and validity of a parent questionnaire on childhood motor skills. Am J Occupational Therapy 54(5): 484-493
[14] Hamilton BB, ranger CV, Sherwin FS et al. A uniform national data system for medical rehabilitation. In further MJ, editor. Rehabilitation outcomes analysis and measurement. Baltimore, MD: Brookes; 1987. pp. 137-47.

