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IMPACT OF PALLANGULI GAME ON VISUAL MOTOR SKILLS AMONG CHILDREN WITH LEARNING DISABILITY

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Abstract:

Learning disability is a neurodevelopmental condition that affects a child's ability to acquire and use academic skills such as reading, writing, and mathematics. They often experience difficulties in visual perception, motor coordination, cognitive functions, and information processing, which significantly influence their academic performance and daily activities. These children also show disruptions in neural coordination required for accurate hand movements and spatial organization. To examine the effectiveness of pallanguli game on visual motor skills among children with learning disabilities. The present study aimed to examine the effectiveness of the Pallanguli game on visual–motor skills among children with learning disabilities. The sample consisted of 12 children with specific learning disabilities, selected using the purposive sampling method. A quasi-experimental one-group pre-test and post-test design was adopted. The paired sample *t*-test was used for statistical analysis. The findings of the study revealed that playing the Pallanguli game significantly improved visual–motor skills among children with learning disabilities. In addition, the intervention demonstrated versatile benefits, including enhancement of cognitive functions.

Keywords: learning disability children, visual motor skills, traditional game and pallanguli game

Introduction

Traditional games play a vital role in shaping the cultural identity and personal development of children, even in the modern Gen Z era. By recreating and preserving these games, societies can pass on valuable cultural norms and traditions from one generation to the next. Every traditional game contributes to enhancing unique qualities in children, such as teamwork, creativity, problem-solving, and physical fitness. Moreover, each state and country possesses a rich traditional heritage that reflects its history and values. When these games are practiced and promoted, they help preserve cultural identity while simultaneously fostering important life skills in young people. Therefore, traditional games are not merely forms of entertainment; they are meaningful cultural tools that support the development of character, discipline, and social interaction among children.

1.1 Traditional game:

Traditional games are a cultural legacy and play a key part in holistic development. Through organised play activities, these games foster physical fitness, cognitive growth, emotional regulation, and social interaction. In contrast to contemporary technology

in the digital era, traditional games involve active participation in peer groups development of problem-solving and decision-making skills which contribute to the development of attention, memory, coordination, and executive functioning. Many traditional games require sequencing, counting, rule-following, and strategic thinking, thereby strengthening neural pathways related to learning and motor control. Furthermore, TG are effective tools for children to engage in educational interventions. Studies have emphasized that indigenous games support the development of visual–motor integration, social skills, and adaptive behavior, particularly among children with learning and developmental difficulties (UNESCO, 2009; Ramachandran & Subramaniam, 2018; Suresh, 2017).

1.1.1 Method of Playing:

Pallanguli: It is an indoor game, played by two people. It is a strategic game with skilful moves and memory about the position and number of tamarind seeds kept in the opponent's pit. There are 14 pits on the game board and each has 7 pits. When children get into the game, they keep playing until the other opponent runs out of tamarind seeds to put into the pit. The game requires more patience and more conscious play.

1.2 Learning Disability

As defined by the American Psychological Association, a specific learning disability (SLD) is defined as a significant impairment in academic or scholastic skills that is restricted to one particular area of learning, such as reading or math difficulty, instead of impacting all areas of learning. If a further distinct feature occurs, a difference of one to two deviations may be deemed indicative of a learning disability. A specific learning disability is defined as a dysfunction in fundamental psychological processes under the Individuals with Disabilities Education Act (IDEA).

1.2.1 Types of Learning Disability:

- Dyslexia – difficulty with reading
- Dyscalculia – difficulty with math
- Dysgraphia – difficulty with writing

1.3 Visual Motor Skills:

It is also known as visual motor integration, refer to ability to coordinate the visual perception and motor action simultaneously. It involves the processing of visual information by the brain and the translation of this information into accurate and controlled physical movements. activities are writing, drawing, chopping vegetables, tying the shoelaces, etc. These depend heavily on visual motor integration.

Review of Literature:

Sanghavi & Kelkar (2005) reviewed Visual Motor Integration and learning-disabled children. The experimental group, which had 16 LD children, was given occupational therapy for 12 weeks and the control group, which had 16 LD children, was given an OT counselling program for 12 weeks. As a result of the comparison to the control group, the experimental group improved. So that the OT had a wide scope for LD children as well as the OT program.

Blasi et al (2007) studied on Relationships between Visual-Motor and Cognitive Abilities in Intellectual Disabilities. Data were collected from 102 children with different severities of intellectual disabilities. Had used WISIC, BGT and the Developmental Test of Visual

Perception. Higher correlations between the spatial subtests of the Developmental Test of Visual Perception and the Performance subtests of the Wechsler Intelligence Scale for Children suggested that the spatial skills and cognitive performance may have a similar basis in information processing. Need to differentiate protocols for rehabilitation and intervention for recovery of perceptual abilities from general programs of cognitive stimulations is suggested.

Allen & Decker (2008) examined the Utility of the Bender Visual-Motor Gestalt Test - Second Edition in the Assessment of Attention-Deficit/Hyperactivity Disorder. The study involved 62 samples that were diagnosed with ADHD, compared to a control group of 62 subjects randomly selected from the BGT–II standardization data. The study concluded that subjects with ADHD performed more poorly on BGT-II than subjects with no known disorders

Capellini et al. (2010) investigated the fine motor functioning of school-aged children with dyslexia, learning disabilities, and learning difficulties. The study included 80 children aged between 7 and 12 years. The participants were divided into four groups: Group I consisted of 20 children with dyslexia, Group II included 20 children with learning disabilities, Group III comprised 20 children with learning difficulties, and Group IV consisted of 20 good readers. The results indicated that most of the groups performed poorly in fine motor tasks.The study concluded that motor, sensory, and perceptual alterations are characteristic features of children with learning disabilities and dyslexia. These characteristics may or may not be present in children with learning difficulties. Furthermore, the study suggested that motor, sensory, and perceptual alterations are responsible for the dysgraphic behavior observed in children with learning disabilities.

Tammanaifar et al. (2012) conducted a study comparing the performance of children with and without learning disorders in the third and fourth grades of primary school using the Bender Gestalt Test. The study involved a sample of 80 children, including those with and without learning disabilities. The results showed that children with learning disorders performed significantly differently from normal children. The findings also indicated that children with learning disorders experienced greater difficulty in drawing the figures of the Bender Gestalt Test.

Tremblay et al (2014) conducted a study on Learning disabilities and visual-motor skills, comparing assessments from a hapto-virtual reality tool and the Bender-Gestalt test. The study involved 22 male and female university students with and without LD, who had their visual-motor skills pretested using a standard paper-and-pencil Bender-Gestalt (BG) test and were compared according to their performance on the MSA tool. Results showed that participants without LD performed better and more rapidly on the VR task than participants with LD. There were no correlations between the BG and MSA performance

Objectives:

To evaluate the effectiveness of traditional games in improving the visual motor skills of children with learning disability

Hypothesis:

Ha: There will be a significant difference between pre-test and post-test in the level of visual motor skills.

Methodology:

Research Design:

The study adopted a quasi-experimental design of one-group pretest and post-test without a control group to examine the impact of the pallanguli game on visual motor skills among children with learning disabilities.

Sample Size:

The sample comprised 12 children diagnosed with a learning disability, selected based on the inclusion criteria. Both male and female children were included in the sample to ensure diversity.

Variable:

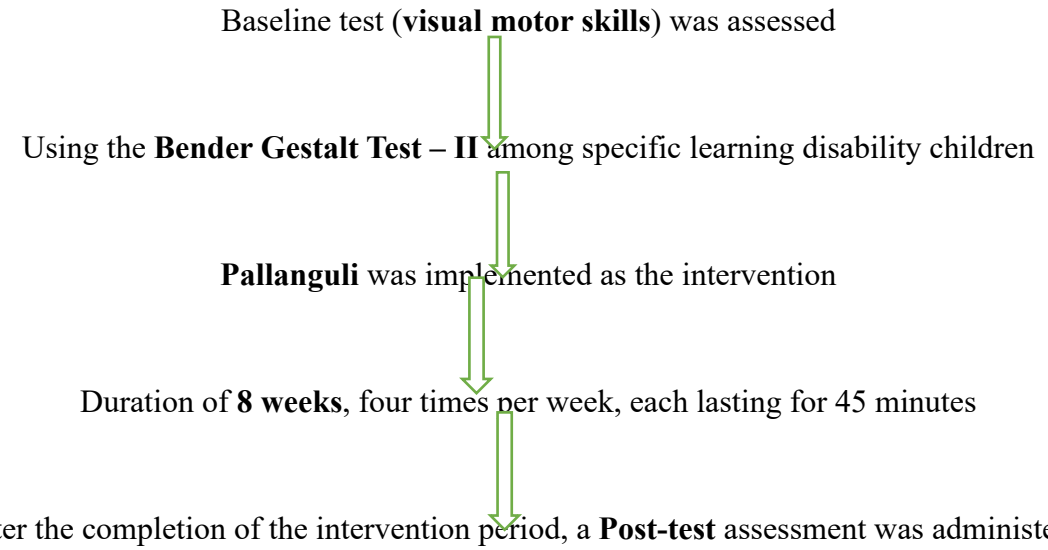
Dependent Variable:

Visual Motor Skills (Bender Gestalt test - II).

Independent Variable:

Traditional games

Sampling Framework:



Inclusion Criteria:

- Children aged 6 to 15 years are included
- Children diagnosed with Specific Learning disability children are included

Exclusion Criteria:

- Children aged below 5 years to Above 16 years are excluded
- Adolescent's groups are excluded
- Children with Comorbid conditions are excluded

Instruments used:

Bender Gestalt Test – II

It's a set of 14 stimulus cards, used to demonstrate the tendency of the visual system to organize visual stimuli into gestalten. The test was developed in the year 1938 by neuropsychiatrist Lauretta Bender. Each card is 3x5 inches, which is a paper-pencil test. Time is allowed for 5-10 minutes. It's one of the most widely used psychological tests to assess visual motor functions in children**.**

Results and Discussions:

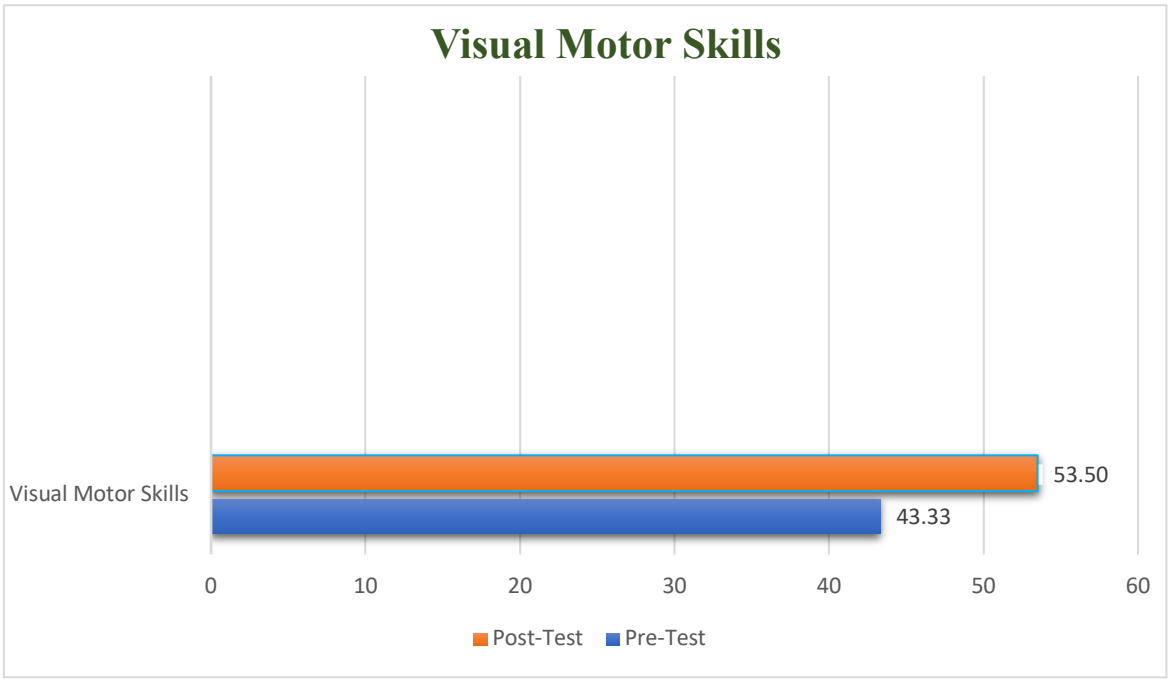
Table 1 shows the Mean, S.D, t-value and P-value in the level of visual motor skills in the Pre-test and Post-test of the Experimental Group

Variables	test	Mean	SD	t-value	p-value
Visual motor skills	**Pre-test**	43.33	6.959	-8.067	.001(S)
	Post-test	53.50	6.446		

*Significant at 0.05 level

Ha - There will be a significant difference between pre-test and post-test in the level of Visual motor skills

From the above table, it is observed that the mean of the pretest for visual motor skills (Mean – 43.33 & SD – 6.959) is higher than the post-test (Mean – 53.50 & SD – 6.446). The P-value is .001, which is statistically significant at the 0.005 level. Therefore, the alternate hypothesis is accepted, and the null hypothesis is rejected.



Conclusion:

The present study examined the effectiveness of the traditional game pallanguli games as an intervention to improve visual motor skills among children with learning disabilities. The finding revealed that playing the traditional game of pallanguli significantly enhanced motor ability and hand-eye coordination in the experimental group. Improvements were particularly evident in children with dyslexia and dysgraphia, who showed better coordination between visual perception and hand movements, as well as increased writing fluency.

Furthermore, the study highlights that Pallanguli serves not only as a recreational activity but also as a culturally relevant therapeutic tool. Traditional games are brain-stimulating and activating in nature. Pallanguli naturally enhances the attention, sequencing, problem-solving, and bilateral hand use, which are essential components of visual–motor integration. Unlike structured clinical exercises, Pallanguli provides a playful and motivating learning

environment, making intervention more engaging and less stressful for children with learning disabilities.

Overall, the study concludes that practicing the traditional game of pallanguli is an effective intervention for enhancing motor skills and neural coordination in children with learning disabilities, as well as supporting their holistic development of children. The study also emphasizes that traditional games possess unique functional benefits and can contribute meaningfully to cognitive and motor development when incorporated into therapeutic and educational settings. Traditional games provide diverse advantages, and each game serves a unique role in stimulating and strengthening neural networks.

Limitation of the Study:

1. The duration of the intervention was limited. A longer intervention period might produce different or more comprehensive outcomes.
2. The study included only children aged 6 to 15 years, limiting the generalization of the results to younger children and older adolescents.
3. Children with comorbid conditions of learning disability were excluded; thus, the results may not represent children who experience multiple coexisting conditions.
4. The study focused solely on children diagnosed with Specific Learning Disability (SLD). Therefore, the results may not be applicable to children with other types of learning or developmental disorders.

Suggestion for Future Research

1) In addition to behavioural therapies, Tamil Nadu traditional games may be implemented not only for children with learning disabilities but also applicable for all developing children and other developmental conditions such as intellectual disability, ADHD and Autism.
2) Longitudinal studies can be conducted to examine the long-term effects of pallanguli as well as other traditional games
3) Traditional games can be incorporated into school settings and school-based intervention to enhance the overall holistic development
4) To compare the effectiveness of Pallanguli with other traditional games to identify specific cognitive and motor benefits associated with each game.

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