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Effect of Yoga Intervention on Motor Functioning and Activity Daily Living of Intellectually Impaired Children

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Abstract

Intellectual impairment refers to a condition where a person has below-average intellectual functioning, together with difficulties in adaptive behaviour. These difficulties are present from a young age and have a negative impact on the person's scholastic achievement. The present research attempts to ascertain the efficacy of yoga intervention schedules on motor functioning and activity daily living (ADL) of intellectually disabled children. Incidental purposive sampling technique was used in the present study a sample of 30 mild and moderate intellectually disabled children was selected, age range between 9- 15 years for all subjects with a mean of 12.50 and SD of 2.16. The sample was further randomly subdivided into two categories of 15 each i.e., (experimental group 15 & control group 15). The assessment of motor functioning and activity daily living (ADL) was conducted with the help of Basic-MR part A. The positive impact of the yoga intervention schedule has been found on the motor functioning and ADL activities of intellectually disabled children in an experimental group whereas insignificant improvement was observed in the control group.

Keywords: *Yoga Intervention, Fine & Gross Motor, Intellectual Disability,* Activity daily living.

Introduction:

Intellectual impairment refers to a condition where a person has below-average intellectual functioning, together with difficulties in adaptive behaviour. These difficulties are present from a young age and have a negative impact on the person's scholastic achievement. It impairs a child's cognitive abilities, hindering their capacity to engage in logical thinking and comprehension, acquire new skills, and achieve developmental milestones within the expected age range. Additionally, it hampers their problem-solving skills, ability to adapt to unfamiliar settings, and capacity to absorb and retain information as effectively as their peers.

Intellectual disability is defined as having an intelligence or mental aptitude that is below average, as well as a lack of abilities required for everyday tasks. Individuals with cognitive impairments can acquire and assimilate novel talents but at a somewhat slower pace. A child with intellectual disabilities has impairments in body scheme, perceptive-motor development, and coordination. However, with appropriate stimulation, they can make notable advancements in psychomotor and motor domains (Silvia and Ofelia, 2013). Prior research investigations have shown that persons with intellectual impairments exhibit notable disparities in health relative to the general population. Physical inactivity in persons with intellectual impairments is associated with obesity (Bhaumik et al., 2008; Melville et al., 2008) and increased death rates (Lauer and McCallion, 2015).

However, several research studies have shown the influence of physical activity and exercise on the physical fitness, mental health, and memory of those with intellectual disabilities. For instance, the exercise program led to a considerable improvement in the reaction time of children with minor intellectual disability after twelve weeks (Yildirim et al., 2010). In addition, a comprehensive evaluation conducted by Bartlo and Klein (2011) uncovered substantial data indicating that physical exercise interventions had a beneficial impact on balance, muscle strength, and quality of life in persons with intellectual disabilities.

Yoga is a branch of ancient Indian Philosophy that aims to enhance performance and unlock inner potential. Yoga offers significant benefits to modern society, including its ability to prevent, treat, and aid in rehabilitation. It is a discipline that focuses on the comprehensive and interconnected growth of our physical, mental, and spiritual dimensions. Yoga is a traditional and well-established art and therapeutic science that has a positive impact on maintaining overall well-being and happiness. "Yoga is a holistic lifestyle," asserts Swami Gitananda Giri Guru Maharaj, that enables individuals to reconnect with their utmost potential in life. The practice is soothing and offers a unique chance in our tumultuous life to direct our attention inside.

According to Hathapradipika, a classical Yoga manuscript, Yoga is a secure and dependable discipline that may be engaged in by individuals of all ages. (According to Hathapradipika I: 64, a young person, an elderly person, a sick person, or a weak person can achieve success by diligent practice, regardless of their physical condition or limitations.) Regardless of age or health condition, those who are watchful and adhere strictly to the rules and regulations can achieve success in all aspects of yoga through consistent practice. Yoga is accessible to anyone with acute or chronic impairments, painful conditions, chronic diseases, and missing limbs. Yoga does not acknowledge any limitations based on age, gender, religion, or belief.

Yoga is widely recognized as a viable practice to include idle and sedentary persons in physical exercise. This occupation involves only a small amount of expertise, resources, or money, making it suitable for those with intellectual impairments. Scientific literature suggests that yoga has the power to enhance health and functional ability. Yoga enhances physical fitness by improving muscle strength, flexibility, and stability (Collins, 1998; Armstrong and Smedley, 2003; Ray et al., 2001). Additionally, research has shown that engaging in yoga activities enhances both intelligence quotient (IQ) and social adaptability characteristics (Uma et al., 1989).

The research conducted by Radhakrishna, Nagrathna, & Nagendra (2010) and Radhakrishna (2010) displayed the effects of yoga on motor performance of challenged children, the measurement utilized was not sensitive enough to capture change. While past research suggests the positive impact of yoga, there is a lack of studies investigating the effectiveness of yoga practices in intellectually impaired children. Hence, the primary aim of this study is to examine the impact of yoga practices on the motor function of children with intellectual disabilities.

Statement of Problem:

The main aim of the present investigation has been to compare the pre and post-test scores of fine and gross motor of intellectually impaired children. The exact problem of the present study is ***"Effect of Yoga Intervention on Motor Functioning and Activity Daily Living of Intellectually Impaired Children"***

Objectives:

For the present research work the following objective was formulated.

(i) To know the effect of yoga intervention on the motor functioning skills of intellectually impaired children.
(ii) To know the effect of yoga intervention on the activities of daily living of intellectually impaired children.

Hypotheses:

(i) There will be no significant difference in the scores of motor functioning skills and activities of daily living of the intellectually impaired children before and after yoga intervention in the experimental group ($H0_1$).
(ii) There will be no significant difference in the scores of motor functioning skills and activities of daily living of the intellectually impaired children before and after yoga intervention in the control group ($H0_2$).

Research Design:

For the present research pre and post-experimental design with the control group was used where the intervention of yoga schedule was the independent variable, whereas motor functioning skills and activities of daily living were dependent variables. A control strategy was adopted in the present investigation.

For Experimental Group

BEFORE (Pre-test)	**The intervention of Yoga employed**	**AFTER (Post-test)**
Motor functioning and Activities in daily living	Duration – 7 weeks	Motor functioning and Activities in daily living

For Control Group

BEFORE (Pre-test)	**The intervention of Yoga not employed**	**AFTER (Post-test)**
Motor functioning and Activities in daily living	Duration – 7 weeks	Motor functioning and Activities in daily living

Sample:

The present study analyzed the motor functioning and activities of daily living of children with intellectual disability who attend special schools in the Nagour district of Rajasthan state. The target population selected for this study includes all the diagnosed cases of children with intellectual disability studying in special schools. Incidental purposive sampling technique was used in the present study a sample of 30 mild and moderate intellectually disabled children was selected, age range between 9- 15 years for all subjects with a mean of 12.50 and SD of 2.16. The sample was further randomly subdivided into two categories of 15 each i.e., (experimental group 15 & control group 15). The 15 intellectually impaired children were given the intervention of a yoga schedule in an experimental group by the yoga experts.

Tool:

Behavioural Assessment Scales for Indian Children with Mental Retardation Part – A (BASIC-MR) The Behavioural Assessment Scales for Indian Children with Mental Retardation is a tool used to evaluate the overall performance of children with mental retardation. The scale was created by Peshwaria and Venkatesan in 1992. This scale consists of two components: part A and part B. To evaluate the motor functioning and ADL activities of children with intellectual disability, the researcher chose two specific areas, which are motor and activities daily living, from part A of the BASIC-MR assessment. Each domain has a total of 40 items. Each item is evaluated using a six-point scale as indicated: The term "score" refers to a numerical value assigned to anything, typically used to evaluate or measure its quality or performance. The scoring system is as follows: 5 indicates independence, 4 indicates effective clueing, 3 indicates verbal prompting, 2 indicates physical prompting, 1 indicates complete dependence, and 0 indicates that the score is not applicable. The researcher has used two domains for the present study maximum score for each domain is 200 and the minimum scoring for each domain 40 or less. The reliability of the BASIC MR is found to be 0.835. The concurrent, contrast and face validity of the scale are also found to be high.

Procedure:

The investigator with prior permission of the principal of the special schools and explained the purpose of the research work. The study took place over 7 weeks. The investigator along with experts of yoga had worked with thirty intellectually disabled students. They were placed randomly into two

groups. The first group was an experimental group in which a yoga schedule was practised daily at 9 AM (45 minutes) for 7 weeks according to their abilities, position, posture and movements. Each subject was assessed with the help of Basic-MR domains motor and ADL skills before intervention. In the second group, which was the control group, the intervention was not produced. After the completion of the 7-week intervention schedule, participants in both the control as well as the experimental group were assessed through the tools used for the pre-assessment process.

Scoring:

For the present research work, scoring of the obtained data was done with help of respective manuals available for the test. The data were arranged in the respective tables according to the statistical test.

Statistical Analysis:

In the present study, to find out the significant mean difference between pre and post-test scores of motor functioning and activities of daily living of intellectually impaired children. Statistical tests like paired sample 't' test, Mean and SD were conducted.

Results & Discussion:

Experimental Group

Table 1:- Showing Mean, SD and SEM between pre and post tests scores of intellectually disabled children for two domains of Basic-MR Motor functioning and ADL.

Basic-MR (Domains)	Groups	N	Mean	SD	SEM
Motor	Pre-test	15	90.00	15.81	4.08
	Post-test	15	102.06	16.73	4.32
ADL	Pre-test	15	107.66	12.51	3.23
	Post-test	15	118.26	15.52	4.00

Table 2:- Results of paired sample t-test between pre and post tests scores of intellectually disabled children for two domains of Basic-MR Motor functioning and ADL.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	SD	SEM	95% Confidence Interval of the Difference				
					Lower	Upper			
Motor	Pre – Post test	-12.06	8.62	2.22	-16.84	-7.29	-5.42	14	.000
ADL	Pre – Post test	-10.60	6.25	1.61	-14.06	-7.13	-6.56	14	.000

The paired sample t-ratios were calculated in order to see whether there is a significant difference between the pre and post mean scores in domains of Basic-MR namely motor and ADL of intellectually disabled children for the intervention of yoga.

It may be inferred from table 1 &2 The mean score of pre-test and post-test are 90.00 (SD=15.81) and 102.06 (SD=16.73) respectively for the motor skills of intellectually disabled children. The paired sample t ratio is reported significant 't'(14) = -5.42, p<.01). On the basis of a significant mean difference, it can be said that yoga intervention plays a significant role in increasing the motor functioning of the ID children.

Similarly, mean values for ADL skills of ID children for pre-test and post-test are reported 107.66 (SD=12.51) and 118.26 (SD=15.52) respectively. The paired sample 't' ratio is highlighted as significant 't'(14) = -6.56, p<.01). On the basis of this significant difference conclusively one can say that the yoga intervention schedule has a significant impact on the ADL skills of intellectually impaired children. Therefore, H01 is strongly rejected.

Control Group

Table 3:- Showing Mean, SD and SEM between pre and post tests scores of intellectually disabled children for two domains of Basic-MR Motor functioning and ADL.

Basic-MR (Domains)	Groups	N	Mean	SD	SEM
Motor	Pre-test	15	91.46	15.40	3.97
	Post-test	15	91.80	15.33	3.96
ADL	Pre-test	15	107.66	12.51	3.23
	Post-test	15	108.06	14.20	3.66

Table 4:- Results of paired sample t-test between pre and post tests scores of intellectually disabled children for two domains of Basic-MR Motor functioning and ADL.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	SD	SEM	95% Confidence Interval of the Difference				
					Lower	Upper			
Motor	Pre – Post test	-.33	5.88	1.52	-3.59	2.92	-.219	14	.830
ADL	Pre – Post test	-.40	5.36	1.38	-3.37	2.57	-.289	14	.777

The findings can very well be analyzed from Table 3 & 4 that insignificant mean differences are to be found in control group for basic-MR domains motor functioning and ADL skills. The t value for motor functioning is 't'(14) = -.219, p>.05 and for ADL skills it is highlighted 't'(14) = -.289, p>.05. On the basis of the above insignificant Mean differences, one can say that significant improvement in motor functioning and ADL skills was not observed without yoga schedule intervention. Thus, H02 is strongly accepted.

Conclusion:

The main aim of the present research is to find out the effectiveness of yoga schedule intervention on the motor functioning and activity daily living (ADL) skills of intellectually disabled children. The study is based on a pre-post experimental design with the control group. Persons with intellectual disabilities (ID) face more challenges in developing motor skills compared to persons without ID. Therefore, it is crucial to encourage the development of various motor skills, including fine motor skills and balance and movement organization (Lahtinen et al., 2007; Vuijk et al., 2010). Similarly, it is concluded that reduced motor functioning has a detrimental influence on daily living skills. Motor competence is closely linked to several everyday chores, including dressing oneself, using utensils, washing up, and tidying up. Regular involvement in yogic activities likely contributed to the enhancement of muscle and joint performance, resulting in improved gross motor function abilities and daily living skills. It is strongly advised that parents with special children also participate in yoga

classes with their children to personally feel the benefits of yoga. Additionally, it facilitates the development of stronger emotional connections and comprehension between the parent and the kid with special needs. The end of yoga is uncertain, but it is certain that yoga assists in recreating, refining, and redefining the kid, so establishing a basis for positive enhancement.

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