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Effects of Multisport on the Development of Critical Thinking Abilities in Autism Patients

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Abstract: Due to differences in neural processes, it can be hard for kids with autism to learn new thinking skills. This different study looks at how well movement skill training works as a strategy to help kids with autism improve their cognitive skill development. Our study, which focuses on Asian people, we hope will help make this problem clearer. The first people to meet were parents of kids with autism spectrum disorder (ASD) to get more personal information about their kids. Kids who have autism spectrum disorder (ASD) can keep track of their progress as they grow with the use of an evaluation instrument that measures their social and cognitive abilities Based on the results of this study.

Keywords: Abilities, Autism, spectrum, disorder , intervention

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INTRODUCTION

A subgroup of developmental impairments, autism spectrum disorders (ASD) make for 4.2% of all disabilities associated with mental illnesses. New comprehensive research found a worldwide mean prevalence of 1% for A diagnosis of autism spectrum disorder is most often made between the ages of three and five. Autism spectrum disease affects about 4 million kids across the country. When a child has autism spectrum disorder (ASD), they might show many different signs, such as difficulties with language, social interaction, repetitive behaviors, and creativity.

Children on the autism spectrum did better when they learned to ride a bike in a natural setting (open motor skill learning) rather than when they did constant closed exercise (riding a stationary bike). It was found that walking, speed running, and team runs, which are continuous skills, were better at helping school-aged kids improve their mental control than yoga, which is a sequential skill.

According to Megan, clinicians often work in isolation while evaluating, diagnosing, and supporting young children with autism. Different from behavioral therapists, occupational

therapists and physical therapists concentrate on motor skills, both fine and gross. Autistic people's social communication abilities may benefit from interventions that target and enhance fine motor skills. Enhancing overall functioning and the way people with autism live their lives may be achieved via early detection and focused therapies that concentrate on boosting both fine motor skills and communication.

People on the autistic spectrum rely heavily on their motor abilities for their daily lives. Their social communication, academic success, and overall quality of life are all profoundly affected by their fine motor abilities. Interventions and People on the autism spectrum can get help may be better guided by an understanding of the significance of motor abilities. We hope that by focusing on Asian populations, our research will help to clarify this issue. Our research aimed to compare the gross and fine motor ability profiles of children with autism spectrum disorder (ASD) to those of normally developing (TD) children using the developmental screening instrument Schedule of Growing Skills II (SGS II).

LITREATURE REVIEW

Francisca Francisete de Sousa Nunes Queiroz et.al (2024) In order to aid health care providers in their work with children who have autism spectrum disorder (ASD), this study shows how the symptoms started and how they got worse a Responsive Portal called "Estimule" that incorporates a set of interactive games. There were two parts to the research process that followed the MITDS Method: (1) a review of the relevant literature and (2) an experiment. Originally, a low-fidelity prototype was created to aid medical practitioners in suggesting recreational activities to enhance the treatment process and aid in the growth of autistic children. Cognitive, physical, and social skill development may take place in any one of the six contexts offered by the Portal.

A Blythe LaGasse (2017) The capacity to develop social skills is significantly impaired in the one in sixtyeight children who are diagnosed on the autism spectrum (ASD). Since social skills can affect your freedom and functioning throughout life, it is crucial to use appropriate treatments to help people develop and improve their social skills. Music therapy has been shown to help When kids with autism spectrum disorder (ASD) are with other kids. Most of the time, clinicians and parents use standardized, nonmusical measures of social functioning to evaluate the outcomes. Individual profiles may also include assessments of musical involvement and results conducted by certified music therapists.

Kassandra E Lowery and Scott Bellini (2020) autism spectrum disorder (ASD) makes it hard for some people to talk to other people. manage their relationships. Because of these limitations, it is challenging for children with ASD to have meaningful and effective friendships. In order to make the Building Social Relationships (BSR) program more suitable for use in a school environment, this article will explore ways to adapt it. By breaking down the BSR program into smaller, more manageable sessions, teachers will have more leeway to use it in a variety of classroom settings and find ways to incorporate it into existing

academic programs. Also covered in this post are several scheduling tweaks that the original BSR program can make to fit in better with school schedules.

Vincent J. Carbone (2013) Making and maintaining eye contact is an important developmental milestone for infants and toddlers. It has been linked to the maturation of linguistic, cognitive, and social competences. Researchers who study growth and behaviour have looked into ways to teach kids how to make eye contact. to autistic children as many of these kids struggle to acquire this crucial ability. Nevertheless, there has been a dearth of recent efforts by researchers to set up the circumstances in which typically developing toddlers acquire social responses by conditioning the reaction of the relationship with the other person as a social conduct. This case study set out to do just that—expand the examination of conventional social skill development to include the pragmatics of teaching a kid with autism to make eye contact as a linguistic skill. Information is given based on a single case study with an autistic youngster.

Alessandro Frolli et.al (2022) Variations in social- Communicating in a sensible way is a hallmark of autism spectrum disorders (ASDs). A "spectrum" of phenotypic variability is used to classify these disorders. One area where virtual reality (VR) has shown promise as a medical intervention tool is in the safe development of social skills in children diagnosed with autism spectrum disorder (ASD) Our research examined two different approaches to helping people develop their social skills: first, emotional training using VR (Gr1), and second, more conventional emotional training in a one-on-one setting with a therapist (Gr2). For the suggested social tasks, we sought to find the intervention that required the least amount of time to learn. The results demonstrate that the acquisition time for primary emotion identification was same across the two intervention methods.

RESEARCH METHODOLOGY

People whose kids have autism spectrum disease (ASD) were the first to meet in order to collect detailed personal information about their children. Building trust with the family was the primary objective. Moreover, parents were asked to provide a complete case history that included personal information. A kid was given a test to determine their IQ and severity of having autism spectrum disease. To figure out how bad ASD is The Indian Scale for Assessment of Autism was used to test kids who had ASD. This was done by the researcher by contacting and visiting five autism-specific clinics and five special schools. With restrictions such as limiting the group's daily activity time to thirty minutes, only one of five schools was given permission to gather data. Kids who have autism spectrum disorder (ASD) have to complete all exercises in the training module, The sample size was 20. Twenty autistic children showed improvement on cognitive measures measured both before and after the session.

DATA ANALYSIS

Improvements in the social and cognitive abilities Mostly this study looked at kids who have been identified with autism spectrum disorder (ASD). research. We set out to accomplish many goals. The first goal was to evaluate the current level of social and cognitive competence among ASD children, and the second was to determine whether or not a specially designed intervention training module was successful in raising these levels of competence.

Table 1: We looked at the mean, standard deviation, and sample paired t-test scores for 20 children with autism spectrum disorder in different areas of their cognitive skills.

Cognitive SkillsVariables	Mean Pre	SD Pre	Mean Post	SD Post	Pairedt-test Score
1. Comprehension Skill					
Recognizing familiar objects	2.40	0.50	4.00	0.56	-9.49
Match similar objects	2.10	0.30	4.15	0.36	-17.96
Follow instructions	2.10	0.30	3.80	0.52	-16.17
Make story	1.90	0.55	3.75	0.44	-14.09
Perform action	1.85	0.36	4.20	0.83	-15.66
Imitate others	2.00	0.32	3.65	0.48	-12.56

Describe and comprehend the situation in the picture	2.05	0.51	3.60	0.50	-9.13
II. Analysis Skill					
Differentiate between two objects	2.00	0.64	4.30	0.73	-11.89
Compare between two objects	1.80	0.41	3.65	0.48	-16.90
Find similarities between two objects	1.80	0.41	3.50	0.51	-9.48
III. Synthesis Skill					
Find missing part of the picture	1.65	0.48	3.55	0.51	-11.83
Join dots for completion of the picture	1.85	0.36	3.55	0.51	-10.36
IV. Evaluation Skill					
Explain objects like flower	1.40	0.50	2.55	0.94	-5.51
Identifying various colors	1.90	0.30	3.60	0.75	-13.30
Placing objects in order	2.00	0.56	3.75	0.44	-8.59
V. Conservation Skill					
Differentiate between two lethetic area	2.00	0.00	2.90	0.85	-4.72
Differentiate between precise big to small	2.35	0.75	3.75	0.44	-6.65
Differentiate volumes of two jars/glass	2.15	0.36	3.45	0.51	-12.36
Understand direction (left and right)	1.85	0.36	3.70	0.57	-16.90
VI. Classification Skill					
Categorized objects	1.70	0.57	3.80	0.41	-11.91
Sorting and resorting objects	1.70	0.47	3.85	0.36	-16.37
Differentiate length	1.80	0.41	2.85	0.85	-4.70
VII. Reasoning Skill					
Follow directions	2.00	0.00	3.90	0.55	-15.37
Differentiate between distance (near and far)	2.10	0.30	3.45	0.51	-12.33
Draw house or men	2.25	0.55	3.90	0.30	-12.56
VIII. Cognitive Mental States Skill					
Recognizes various emotions	2.05	0.82	3.45	0.51	-6.65
Hits object from a specific distance	2.15	0.36	3.10	0.55	-7.02

Find hidden objects from the box	1.30	0.47	3.55	0.51	-12.79
Guess what inside the envelope	1.65	0.67	3.30	0.47	-9.90
Understanding others mental state	1.85	0.58	3.30	0.73	-6.17
Draw an unusual picture (imagination)	1.80	0.52	3.35	0.48	-10.10
IX. Executive Functioning Skill					
Find a route from mazes (simple to complex)	1.15	0.36	3.30	0.47	-14.03
Make the connection between number and star (*)	1.65	0.48	3.35	0.48	-10.92
Place blocks in the right place	1.65	0.48	3.60	0.75	-11.57
X. Perceptual Processing Skill					
Make patterns	1.75	0.44	3.30	0.57	-9.83
Find and put the block in the shape	1.95	0.60	3.45	0.51	10.10

An important difference was seen in the cognitive variable of object identification between the scores of 20 children with autism spectrum disorder before and after the intervention (n=20 pre-intervention; mean pre score=2.40, SD pre=0.50; mean post score=4.00, SD post=0.56, and paired t-test score = 9.49). The findings show that all 20 samples showed an improvement in the cognitive ability after the intervention.

The cognitive variable of object placement showed a big change between scores before and after the action (N=20): mean pre score = 2.00, SD pre score = 0.56, mean post score = 3.75, SD post score = 0.44, and paired t-test score = -8.59. All twenty children diagnosed with autism spectrum disorder were able to correctly recognize numbers from 1 to 10 after the intervention.

On the cognitive variable of object sorting and resorting, there was an important difference was seen between the scores before and after the intervention (N=20): mean pre=1.70, SD pre=0.47, mean post=3.85, SD post=0.36, and paired t-test score = -16.37. Twenty kids who were diagnosed with autism spectrum disorder all got better in cognitive measures both before and after the study.

Table 2: Descriptive measures of Trial and Error Mean and SD in cognitive tasks performed by all of the 20 children with autism spectrum disorder

Cognitive Tasks	Trial-1				Trial-2				Trial-3				Trial-4			
	Time		Error		Time		Error		Time		Error		Time		Error	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Understanding Emotion Recognition	2.35	0.76	5.25	2.31	2.32	0.99	3.2	1.32	1.75	0.62	1.8	1.19	1.51	0.63	1.1	1.02
Hits Object	2.3	0.53	5.8	1.36	2.22	0.51	3.4	1.53	1.92	0.67	1.8	1.10	1.66	0.52	0.95	0.94
Imagination Drawing	5.36	1.78	8.4	3.61	5.12	1.52	5.2	2.83	4.84	1.61	4.84	1.73	4.48	1.36	1.85	1.34
Find Hidden Toy from theBox	2.43	1.33	5.3	2.17	2.35	1.26	3.5	1.90	1.97	1.04	2.45	1.46	1.77	1.06	1.6	1.14
Knowing and guessing	2.12	1.18	6.1	2.46	2.16	1.19	3.75	2.17	1.82	1.09	2.05	1.43	1.62	1.05	1.3	1.03
Find Rout	2.63	0.92	6.75	3.44	2.46	1.14	3.95	3.05	2.41	1.05	1.95	2.56	2.02	1.01	0.85	1.22
Puzzle Solving	4.39	0.99	7.9	0.89	4.29	0.92	4.85	3.03	3.94	0.97	2.7	2.27	3.56	0.96	1.3	1.34
Picture Design	3.77	1.00	6.8	2.76	3.70	0.99	4.05	1.95	3.31	1.07	2.6	1.60	3.04	1.00	1.5	1.14
Color Sorting	2.67	0.76	2.65	3.45	2.57	0.68	1.7	2.40	2.23	0.60	0.7	0.90	1.98	0.62	0.25	0.63
Make Design	3.17	0.93	0.85	1.66	3.06	0.95	0.5	1.39	2.94	0.92	0.3	0.80	2.43	0.75	0.05	0.22
Make House	6.98	2.11	9.8	3.91	6.39	1.93	6.4	2.50	5.87	1.71	3.65	2.10	5.59	1.55	2.25	1.40
with Block																
Block Design	2.67	0.85	6.6	2.85	2.52	0.87	4.2	1.93	2.11	0.80	2.5	2.11	1.97	0.72	1.6	1.35
Find and Place into Tray	3.43	0.80	6.09	2.62	3.28	0.86	3.23	2.06	2.78	0.66	1.95	1.48	2.64	0.59	0.95	1.19
Find Length	4.09	0.93	5.85	2.20	4.06	0.81	3.55	1.66	3.51	0.90	1.7	1.34	3.10	0.77	1.00	1.00
Find number	2.31	0.63	5.35	2.43	2.25	0.67	3.1	1.88	2.01	0.74	1.35	1.13	1.78	0.67	0.75	0.97
Say Water in the Glass	2.68	0.70	3.95	2.87	6.61	0.75	2.2	1.70	2.31	0.55	1.00	1.18	1.85	0.63	0.6	0.82
Find Area	1.40	0.74	4.00	1.58	1.40	0.73	2.7	1.41	1.17	0.84	1.4	0.99	0.82	0.57	1.00	1.07

Sorting and Resorting	1.92	0.71	3.8	1.73	2.05	0.87	1.8	1.32	1.62	0.77	1.05	1.14	1.46	0.68	0.3	0.57
Make Connection	1.61	0.82	4.1	2.22	1.59	0.80	2.45	1.43	1.44	0.78	1.35	1.03	1.05	0.76	0.7	0.73
Find Distance	1.35	0.49	4.3	1.94	1.31	0.51	2.6	1.78	1.13	0.66	1.65	1.26	0.95	0.53	1.05	0.99
Follow Me	2.14	0.82	5.15	2.81	2.01	0.85	3.00	1.86	1.87	0.81	2.05	1.70	1.50	0.57	1.45	0.99
Join Dots	1.59	0.56	3.55	1.19	1.43	1.56	2.3	1.26	1.27	0.64	1.45	0.82	0.44	0.93	0.65	0.67

The cognitive tasks that children with autism spectrum disorder completed on all four trials are shown in Table 2, together with their means and standard deviations.

Table 3: Descriptive measures of Trail and Error Mean and SD in Social tasks performed by all 20 kids who have autism spectrum disorder

Social Tasks	Trial-1				Trial-2				Trial-3				Trial-4			
	Time		Error		Time		Error		Time		Error		Time		Error	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I Can interact with my friend (Social Interaction)	5.40	1.06	5.3	2.40	5.23	0.88	4.3	1.71	4.64	0.87	2.7	1.30	4.40	0.94	2.45	1.79
I can communicate (Social Communication)	5.60	1.31	6.35	2.85	5.30	1.11	3.4	1.90	4.86	1.01	2.7	2.15	4.32	1.08	1.8	1.10
I can Help (Social Competency	4.58	1.04	4.65	2.10	4.39	0.97	3.35	1.66	4.08	0.83	2.55	1.57	3.67	0.87	1.65	0.89
I can find my happiness (Social Empathy)	3.48	1.12	3.75	1.37	3.40	1.12	2.5	2.13	3.00	1.12	1.6	1.35	2.56	1.01	0.85	1.22
I can play (SocialPlay)	4.15	0.89	4.45	1.46	4.10	0.86	2.65	1.84	3.54	0.79	1.95	1.27	3.25	0.81	1.45	1.14

The social tasks that children with autism spectrum disorder completed on all four trials are shown in Table 3 together with their respective means and standard deviations.

T-1 response time mean 4.15 and SD is 0.89, error mean is 4.45 and SD is 1.46; T-2 response time mean 4.10 and SD is 0.86, error mean is 2.65 and SD is 1.84; T-3 response mean is 3.54 and SD is 0.79, error mean is 1.95 and SD is 1.27; and T-4 response time mean 3.25 and SD is 0.81, error mean is 1.45 and SD is 1.14 on the social play task. A statistically significant difference was observed in the reduction of response time errors during task execution. The results show that the kids have made great strides in completing the activity with less time

spent responding and fewer mistakes made. Additionally, kids on the range of autism took part in a group-based social skills program for four sessions, with each session lasting 60 minutes.

In order to determine IQ, the Raven Colored Progressive Matrix exam was used. His test result was in the 85th percentile. We opted for this instrument because of the non-verbal cues it offers. Additionally, to gauge the severity of autism spectrum condition, The Indian Scale of Assessment of Autism was used. He was classified as having a mild case of autism spectrum condition, with an evaluation score of 73 on the Indian diagnostic scale.

Topic 3: After 20 sessions of the intervention training in the program, kids with autism spectrum disorder made big strides in cognitive and social skills tests.

A doctor recommended Case-2, a 7-year-and-a-half-month-old girl, to the clinic for treatment after diagnosing her with autism spectrum disorder. The child's hyperactivity and restlessness, in addition to her reliance on others for some of her daily requirements and her inability to communicate properly, are all noted by her parents.

The intelligence test was the Raven Colored Progressive Matrix. Her test result was in the 91st percentile. Because it allows for non-verbal performance, this tool was selected. Additionally, her severity of autism spectrum condition was determined by using the Indian Scale of Assessment of Autism. She was diagnosed with autism spectrum disorder at the moderate category level, with an ISAA score of 89.

CONCLUSION

A tool that checks a child's social and mental skills can help parents of kids with autism spectrum disorder (ASD) keep track of their child's progress. It is clear from the results of this study that the current groupbased social skills program for kids with autism spectrum disorder (ASD) needs to meet more often than it does now. Children who have autism spectrum disorder (ASD) were the first to speak out meet in order to collect detailed personal information about their children. Building trust with the family was the primary objective Due to differences in neural processes, it can be hard for kids with autism to learn new thinking skills. This different study looks at how well movement skill training works as a strategy to help kids with autism improve their cognitive skill development.

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