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Sports As An Intervention For Persons With Disabilities

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Abstract

Persons with disabilities (PWDs) struggle with several challenges across various domains of their everyday lives, which severely impair their routine and quality of life. Several therapeutic interventions have shown improvement in various developmental areas of persons with disabilities. The current research was conducted on 17 individuals with intellectual disability with an aim to assess the effectiveness of Sports as a therapeutic intervention for improvement in developmental domains such as psycho-motor, social skills, communication skill, emotional and cognitive domains. The findings indicated that there is a significant improvement in the psycho-motor domain, social skills domain, communication skills domain and cognitive domain as a result of utilizing Sports as a therapeutic intervention. Except the emotional domain, Sports as an intervention displayed a significant positive correlation across domains in the next 3 and 6 months respectively.

Keywords – Sports, exercise, psycho-motor domain, social skills, communication skill, emotional domain, cognitive domain

Introduction

Post-COVID, there seems to be a surge in research on health of individuals and the community at large. Health, its contributing factors and healthy habits have become regular columns in newspapers, media and social media. When it comes to understanding the concept of health, there are several explanations. One of the most widely accepted definitions of health has been given by World Health Organization (WHO), which states that health is a state of physical, mental and social well-being, and not merely the absence of diseases or infirmity (WHO, 1948).These three components interact with each other to contribute to the overall health of the person. This model is referred to as bio-psychosocial model, which takes into consideration a holistic perspective on health.

Major determinants of health include physical factors (such as consuming a healthy diet, staying hydrated, exercising regularly and physically active, reducing sitting and screen time, getting enough sleep, no use of substances), psychological factors (such as effective ways to manage emotions, effective stress management, coping mechanisms and resilience) and social well-being (such as social environment and social relationships, impact of social structures on individuals and their interactions).

Mental health refers to a state of well-being and effective functioning in which an individual realizes his or her own abilities, is resilient to the stressors of life and is able to make a positive contribution to the society (WHO, 2022). Similar to health, there are several factors contributing to mental well-being of an individual, which are biological and environmental factors. Biological factors majorly include an individual's genetic makeup, physical activeness, substance use, hormonal balance and neuro-chemistry whereas environmental factors include immediate family environment, social connections, unstable housing or financial constraints.

Among several contributors, a major contributor to positive mental well-being is physical health. There has been an unprecedented rise in the number of people who are actively looking for ways to take care of their physical health. Many people are opting for gym, regular walks, yoga and even playing sports. The reason behind this trend is based on factors such as to appear good, maintaining a healthy lifestyle and to maintain weight (IISM & FICCI, 2019). With all the available data, exercise in any form is considered to be crucial for fitness and longevity (Reimers, Knapp, & Reimers, 2012). It has physical benefits such as reducing the risk of cardio-vascular diseases and fitness of bone and muscles. (Kapoor, Chauhan, Singh, Malhotra, & Chahal, 2022), reduces susceptibility to chronic diseases, enhances and regulates sleep cycle, and release hormones such as endorphins which can make people feel happier (Semeco, 2023).

People with disabilities include those who have long term physical, mental, intellectual or sensory impairments, which in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others (DESA, 2006). It is not a homogenous group as there is a lot of diversity when it comes to gender, age, religion, etc. They may experience impairment, exclusion or discrimination. WHO estimates about 16% of the world's population has a disability. Persons with disabilities have rights, needs and challenges similar to others. They have difficulty accessing education, livelihood, humanitarian assistance and health care and other services (WHO, 2023).

Persons with disabilities may experience stigma and discrimination on an everyday basis (WHO, 2023). They are excluded from groups and other activities. Many times, their physical potential goes unnoticed. Hence, physical activities and exercises can help them. It can also support daily living activities of people with disabilities by strengthening bones and muscles. In addition, exercise can help people deal with stress, anxiety and low mood as it releases "feel good" chemicals in the brain (MedlinePlus, 2025). Physical activity keeps thinking, judgement and learning skills sharp as one ages, by stimulating the body to release proteins and other chemicals that improve the structure and function of the brain (USCDC, 2024). In addition, For People with disabilities, physical activities can improve cognition in people suffering with Multiple Sclerosis, Improve strength in muscles and endurance in people with Spinal cord injury (Azar, 2018). Indulging in sports, leisure, physical activities and exercises may also serve as a protective factor against developing secondary health conditions and mental illnesses (USCDC, 2024).

Psycho-motor Domain - This includes physical movements, motor coordination and motor skills. It encompasses fine and gross motor skills and reflexive responses. Some of the actions are learned and performed to meet the requirement of the specific environment and situations. They are executed to adapt to diverse environment (Hoque, 2016).

Social - skill Domain - Social skills are used in our daily life to communicate with others in a variety of ways including verbal, non-verbal, written and visual. They are also understood contextually. They are usually used synonymously with soft skills, as it encompasses interpersonal skills such as taking in perspectives or building interpersonal relationships (Schoon, 2021).

Communication skill Domain - Of all the life-skills, having the ability to speak is the most effective skill humans have. The communication skills help determining connecting with other people as the process of communication is bilateral. It depends on two people or two groups of people where they send and receive messages (Al - alawneh, Al - Hawamleh, Al - Jamal, & Sasa, 2019).

Emotional Domains - Feelings are constantly involved in life. They are reactions to things that people face and make them act in a certain way. Emotions can range from primary to more complex in nature. It's an indication of what is important for one's mental health, and serves as a glimpse into the mental growth of humans (Thompson, 2015).

Cognitive Domains - Cognitive abilities are the mental abilities which enables humans process information from within and the environment. They are tools one uses to navigate complex situations and make sense of our experiences. It is a process that enables individuals to acquire, process and apply knowledge, and reflects core human intelligence (Hoque, 2016).

Review of Literature

There is a plethora of research on the effects of exercising on the general population. It ranges from physical, social and mental health benefits. The major conclusion from all these researches indicates physical activity as a promising tool for intervention on the general population. However, there is a dearth of research on the effects of physical activity on people with disabilities.

With respect to the global literature, a study conducted in South Korea stated that an increase in physical leisure activities tends to promote life satisfaction among adolescents with disabilities. Many adolescents with disabilities find it challenging to access places which offer space for physical activities. Hence, participation is limited. This study also explored Activities of Daily Living (ADL) as a substantial aspect of life satisfaction. These activities would include personal hygiene, grooming, mobility and bowel movement management. With these activities, one can enhance quality of life and become independent. People with disabilities experience challenges in ADL, which significantly impairs their quality of life. This research stresses on the need for programs targeting physical leisure activities to enhance life satisfaction among adolescents with disabilities (Ryu, Kawoun, & Song, 2024).

In addition, a systematic review on barriers and facilitators of sports as an intervention for people with disabilities concluded that in order to plan a sports-based intervention, the type of disability and areas of impairment need to be in tandem with each other- appropriate activities relevant to their needs can help them grow both physically and mentally (Jaarsma, Dijkstra, Geertzen, & Dekker, 2014).

A randomized control trail was conducted on adolescents with Down syndrome to assess the effectiveness of a soccer program on specific motor coordination, psychological and social parameters. The results concluded that there was significant improvement in the psychological parameter of adolescents. Also, there was improvement in social behavior and motor coordination (Peric, Milicevic - Marinkovik, & Djurovic, 2021).

Similarly, another research assessed the effectiveness of a table tennis training program and standard occupational therapy on visual-perception and executive functions of children with mild intellectual disability and borderline intellectual functioning. On comparison with the control group, those participating in the table tennis program showed significant psycho-social benefits experienced by the children. Recent researches are also emphasizing on the interrelatedness of motor and cognitive development in children with intellectual disability. This research concluded with an improvement in, both, visual-perception and executive functioning (Chen, Tsai, Wang, & Wuang, 2015). On older adults with intellectual disability, an assessment of a structured physical activity and fitness program showed improvements in muscle strength, blood pressure (systolic and diastolic), serum cholesterol levels and cognitive functions (Shijndel-Speet, Evenhius, Wijck, M van Montfort, & Echteld, 2016).

Studies reveal that people with disabilities have a higher prevalence of depressive symptoms as compared to the general population. As a counter measure, the effects of physical activity and exercise on depressive symptoms of people with disabilities were reviewed using meta-analysis. Some studies gave promising results by showing a reduction in the depressive symptoms, while other studies revealed no significant results. The lack of improvement was attributed to several factors such as small sample size, lack of resources and limitation in the structure of development and evaluation. A study exploring a soccer program as intervention provided significant results in individuals with Down syndrome (Jacinto, et al., 2023).

Sports also contribute to overall well-being (Jacinto, et al., 2023). Studies have explored the effects of exercise programs on anxiety symptoms of people with disabilities, with results pointing to physical exercise helping with management of symptoms of anxiety and multiple positive effects on people with disabilities (Jacinto, Frontini, Matos, & Antunes, 2021).

Methodology

Scope of the study - The study was conducted on persons with disabilities who were receiving Sports as a therapeutic intervention.

A) Research design - The study employs action research design, which is solution-driven and helps to carry out various observations by making solution-based interventions. The study will include descriptive accounts, and comparison between observations made about the participants over time.

B) Participants - Initially, 20 participants who comes under the category of persons with disability (PWDS) were part of the study but 3 participants were not able to continue. Hence, 17 participants were part of the study.

C) Sampling technique - Purposive sampling technique was employed as a method of selecting samples for the study.

D) Material/measures used for data collection- A structured questionnaire was used based on the dimensions chosen as the area of the study i.e. psycho-motor domain, social skills domain, communication skills domain, emotional skills domain and cognitive domain.

E) Procedure for data collection- Data was collected by means of observations made by the therapist providing Sports as a therapeutic intervention over a time period of 6 months i.e. 2 quarters of the year. Initial observation was made before providing the therapy, the second observation was made after providing therapy for 3 months i.e. one quarter, and the third observation was made when the therapy had been provided for another 3 months i.e. second quarter.

F) Data analysis- Data analysis was done using SPSS.

Results

Table 1: Mean Values obtained by participants over various interval for different domains

	Descriptive Statistics					
Time Duration		N	Minimum	Maximum	Mean	Std. Deviation
Before providing Sports Therapy	Psycho-motor Skills	20	.00	117.00	73.50	31.83
	Social Skills	20	.00	43.00	26.80	12.073
	Communication Skills	20	.00	43.00	28.95	12.93
	Emotion Skills	20	.00	66.00	50.00	18.01
	Cognitive Skills	20	.00	45.00	28.60	13.44
After 3 months of providing Sports Therapy	Psycho-motor Skills	20	.00	138.00	83.70	43.56
	Social Skills	20	.00	51.00	31.35	16.43
	Communication Skills	20	.00	52.00	33.45	17.72
	Emotion Skills	20	.00	61.00	44.95	19.84
	Cognitive Skills	20	.00	53.00	33.10	18.26

After 6 months of providing Sports Therapy	Psycho-motor Skills	20	56.00	156.00	113.20	31.10
	Social Skills	20	18.00	59.00	42.85	12.21
	Communication Skills	20	21.00	61.00	44.85	12.19
	Emotion Skills	20	37.00	63.00	49.40	6.50
	Cognitive Skills	20	13.00	61.00	43.15	14.42

Table 1 shows the mean value obtained by the participants on different domains at different levels of intervals of time during which they were provided with Sports therapy and physical activities. The mean score obtained by the participants in Psycho-motor skills before sports therapy is (M_P = 73.50), after providing sports therapy after 3 months was (M_{P1} = 83.70), and after providing sports therapy after 6 months is (M_{p2} = 113.20). The mean score obtained by the participants in Social Skills before sports therapy (M_s = 26.80), after 3 months of providing sports therapy (M_{s1} = 31.35), after 6 months of providing sports therapy (M_{s2} = 42.85). The mean score obtained by the participants in the Communication skills before sports therapy (M_c = 28.95), after providing sports therapy after3 months was (M_{c1} = 33.45), after providing sports therapy after 6 months (M_{c2} = 44.85). The mean score obtained by participants in Emotional skills before therapy (M_e = 50.00), after providing sports therapy after 3 months (M_{e1} = 44.95), after providing sports therapy after 6 months (M_{e2} = 49.40). The mean score obtained on the cognitive skills (M_{co} = 28.60), after providing therapy after 3 months (M_{co1} = 33.10) and after providing sports therapy after 6 months (M_{co2} = 43.15).

Table 2: The correlation between various domains of the study before and after providing Sports Therapy

Domains	Effect	Psycho-motor Skills	Social Skills	Communication Skills	Emotion Skills	Cognitive Skills
Psycho-motor Skills	Before	1	.922**	.940**	.796**	.947**
	After 3 months	1	.956**	.960**	.837**	.969**
	After 6 months	1	.901**	.858**	.327	.920**
Social Skills	Before		1	.795**	.074	.578*
	After 3 months		1	.988**	.794**	.958**
	After 6 months		1	.947**	.248	.915**
Communication Skills	Before			1	.740**	.939**
	After 3 months			1	.794**	.967**
	After 6 months			1	.336	.916**
Emotion Skills	Before				1	.728**
	After 3 months				1	.784**
	After 6 months				1	.344

Table 2 depicts the correlation between various domains on the participants with disabilities before and after Sports therapy. There was a significant positive correlation between Psycho-motor skills with social skills (.922**, .956**, .901**), Communication skills (.940**, .960**, .858**) & Cognitive skills (.947**, .969**, .920**) before providing sports therapy and after providing sports therapy for 3 and 6 months consecutively at .01 level of significance. Psychomotor skills have a significant positive correlation with Emotion skills (.796**, .837**) before and after providing sports therapy for 3 months at .01 level of significance. There is a significant positive correlation between Social skills and Communication skills (.795**, .988**, .947**) before providing sports therapy and after providing sports therapy for 3 and 6 months consecutively at .01 level of significance. Social skills also have a significant positive correlation with Emotion skills (.794**) at .01 level of significance after providing sports therapy for 3 months and Social skill has a significant positive correlation with cognitive skills (.578*) at .05 level of significance before providing sports therapy. Social skill also has a significant positive correlation with cognitive skills (.958**, .915**) after providing sports therapy for 3 & 6 months at 0.01 level of significance. There is a significant positive correlation between Communication skills and Emotion skills (.740**) before providing any sports therapy at .05 level of significance and (794**) after providing sports therapy for 3 months at .01 level of significance. and Communication skills also have a significant positive correlation with cognitive skills (.939**, .967**, .916**) before and after providing sports therapy for 3 months at .01 level of significance. There is a significant positive correlation between Emotion skills and Cognitive skills (.728**, .784**) before and after providing sports therapy for 3 months at 0.01 level of significance.

Table 3- Comparison of Psychomotor Domain Before and After 3 & 6 months of Sports therapy

Pair 1- Psycho-motor Domain Before and Psycho-motor Domain after 3 months
Pair 2- Psycho-motor Domain Before and Psycho-motor Domain after6 months
Pair 3- Psycho-motor Domain after 3 months and 6 months

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	-10.20000	23.25737	5.20051	-21.08478	.68478	-1.961	19	.065
Pair 2	-39.70000	17.87412	3.99678	-48.06535	-31.33465	-9.933	19	.000
Pair 3	-29.50000	27.72136	6.19868	-42.47399	-16.52601	-4.759	19	.000

Table 3 shows the development in psycho-motor skills of the participants after they have been provided Sports therapy for 3 months, following after 6 months. The results show that there is no significant difference in the psycho-motor domain after providing sports therapy for 3 months. But there is a significant difference observed in the psycho-motor skills of the participants after 6 months of continuous sports therapy at .01 level of significance. There is also a significant difference between the psycho-motor skills between the time span of 3 months and 6 months of providing sports therapy at .01 level of significance.

Table 4 - Comparison of Social Skills Domain Before and After 3 & 6 months of Sports therapy

Pair 1- Social Skills Domain Before and Social Skills Domain after 3 months
Pair 2- Social Skills Domain Before and Social Skills Domain after 6 months
Pair 3-Social Skills Domain after 3 months and 6 months

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	-4.55000	9.88606	2.21059	-9.17682	.07682	-2.058	19	.054
Pair 2	-16.05000	7.49368	1.67564	-19.55715	-12.54285	-9.578	19	.000
Pair 3	-11.50000	10.57554	2.36476	-16.44951	-6.55049	-4.863	19	.000

Table 4 shows the development in social skills of the participants after they have received sports therapy after 3 months and after 6 months. The results show that there is no significant difference in the social skills domain after providing sports therapy for 3 months. But there is a significant difference observed in the social skills of the participants after 6 months of continuous sports therapy at .01 level of significance. There is also a significant difference between the social skills between the time span of 3 months and 6 months of providing sports therapy at .01 level of significance.

Table 5 - Comparison of Communication Skills Domain Before and After Sports Therapy

Pair 1- Communication Skills Domain Before and Communication Skill Domain after 3 months
Pair 2- Communication Skills Domain Before and Communication Skill Domain after 6 months
Pair 3- Communication Skills Domain after 3 & 6 months

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	-4.50000	10.82152	2.41977	-9.56463	.56463	-1.860	19	.078
Pair 2	-15.90000	8.38482	1.87490	-19.82422	-11.97578	-8.480	19	.000
Pair 3	-16.55000	14.45674	3.23263	-23.31596	-9.78404	-5.120	19	.000

Table 5 shows the development in the communication skills of the participants after they have been provided Sports therapy initially for 3 months and then 6 months. The results show that there is no significant difference in the Communication skills domain after providing sports therapy for 3 months. But there is a significant difference observed in the communication skills of the participants after 6 months of continuous

sports therapy at .01 level of significance. There is also a significant difference between the communication skills between the time span of 3 months and 6 months of providing sports therapy at .01 level of significance.

Table 6 - Comparison of Emotional Skills Domain Before and After Sports Therapy

Pair 1- Emotional Skills Domain Before and Emotional Skill Domain after 3 months
Pair 2- Emotional Skills Domain Before and Emotional Skill Domain after 6 months
Pair 3- Emotional Skills Domain after 3 & 6 months

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	5.05000	10.86508	2.42951	-.03501	10.13501	2.079	19	.051
Pair 2	.60000	15.20526	3.40000	-6.51628	7.71628	.176	19	.862
Pair 3	-4.45000	16.43320	3.67457	-12.14097	3.24097	-1.211	19	.241

Table 6 shows the development in emotional skills of the participants after they have been provided sports therapy initially after 3 months and after 6 months. The results indicate that there is no significant difference in the emotions skills after providing sports therapy for 3 & 6 months at any level of significance.

Table 7- Comparison of Cognitive Skills Domain Before and After Sports Therapy

Pair 1- Cognitive Skills Domain Before and Cognitive Skill Domain after 3 months
Pair 2- Cognitive Skills Domain Before and Cognitive Skill Domain after 6 months
Pair 3- Cognitive Skills Domain after 3 & 6 months

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	-4.50000	9.11043	2.03715	-8.76381	-.23619	-2.209	19	.040
Pair 2	-14.55000	8.18519	1.83026	-18.38079	-10.71921	-7.950	19	.000
Pair 3	-10.05000	10.46033	2.33900	-14.94558	-5.15442	-4.297	19	.000

Table 7 shows the development in cognitive skills of the participants before they were provided sports therapy and after 3 months after sports therapy, followed by 6 months of sports therapy. The difference reflected in the table shows that there is a significant change in the cognitive skills domain of the participants after sports therapy was provided after 3 months (0.40) at .05 level of significance. There is aalso a significant

difference observed in the cognitive skills of the participants after 6 months of continuous sports therapy at .01 level of significance. There is also a significant difference between the cognitive skills between the time span of 3 months and 6 months of providing sports therapy at .01 level of significance.

Discussions

The current research displayed some positive results of Sports being utilized as a therapeutic intervention for persons with disabilities. The improvements were observed in various domains such as the psycho-motor domain, social skills domain, communication domain and cognitive domain. There is significant improvement in the psycho-motor domain of the participants after being provided Sports as a therapeutic intervention for 3 months and 6 months respectively. Critical analysis of several researches revealed that physical activity is vital in improving motor coordination, balance and muscle strength (Bartlo & Klein, 2011), (Peric, Milicevic - Marinkovik, & Djurovic, 2021). In general, it has been noted that it is common for persons with disabilities to have a more sedentary lifestyle, which results in lack of physical fitness and secondary health conditions. In addition, they struggle with delay in achieving motor milestones. Sports-based interventions could be used to attain better fitness and coordination.
Similarly, the social skills domain displayed substantial improvements as a result of Sports as a therapeutic intervention. Past researches have indicated that physical activity helps persons with disabilities in enhancing social skills and social relationships (Peric, Milicevic - Marinkovik, & Djurovic, 2021). With respect to improving social skillsets, Sports become a moderator in breaking the ice and allows participants to interact with peers known or unknown to them through the play method. As dynamic as social skills are, they are key in building social relationships.

Other areas of improvement were in the communication domain and cognitive domain with Sports as a therapeutic intervention for 3 months, followed by 6 months. Similar to social skills, communication skills were enhanced as well, possibly due to the fact that engaging in Sports requires communication with other participants. With regards to the cognitive domain, previous researches indicate that racket sports, such as table tennis, seem to show better results on executive functioning and visual perceptions (Chen, Tsai, Wang, & Wuang, 2015). Impairment in executive functioning in participants results in problems with reasoning, problem-solving and attention. Research on several types of physical activities such as aerobic exercise indicates improvement in executive functioning in children (Best, 2010).

There were no significant changes observed in the emotional domain as a result of Sports as a therapeutic intervention provided, neither after 3 months nor after 6 months. There are contradictory findings with respect to the emotional domain, with some studies reporting resulting improvement, and others reporting no significant improvements as a result of Sports (Jacinto, Frontini, Matos, & Antunes, 2021). However, post sports as an intervention, a positive correlation was observed of the emotional domain with the other domains of cognitive, social skills and communication skills.
Additionally, the results indicate a positive correlation of psycho-motor domain with social skills domain, communication skill domain and cognitive domain, suggesting the enhancements in the psycho-motor domain are associated with corresponding improvements in social skills, communication skill and cognitive domains.

Conclusion

In conclusion, the current research findings indicate an improvement in the psycho-motor domain, social skills domain, communication skill domain and the cognitive domain of persons with disabilities after undergoing Sports as a therapeutic intervention implemented for 3 months and 6 months. These results suggest that structured sports programs will enhance physical development as well as necessary interpersonal skills and cognitive abilities in persons with disabilities (PWD). Therefore, this highlights the transformative potential of sports as an inclusive, holistic therapeutic tool that can significantly enhance the quality of life and integration of persons with disabilities into the community.

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