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The Effectiveness of a Yoga Training Program on Developing Motor Coordination and Social Interaction in Individuals with Autism Spectrum Disorder

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Abstract:

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by difficulties with motor coordination and balance, impaired social interactions and communication, and restricted and repetitive behaviors. Research indicates that this disorder is constantly increasing. The global prevalence rate of autism was found to be 1%. One of the most prominent difficulties faced by children with autism is self-regulation, which is a person's ability to manage emotions and behaviors, which greatly affects their daily lives. Individuals have difficulty initiating communication with peers and may display repetitive motor behavior. In recent years, interest has begun to grow in the use of physical interventions such as yoga as part of therapeutic interventions for individuals with autism. Research indicates that physical activity positively affects cognitive and executive functions. In this study, the effectiveness of a yoga training program was evaluated on developing motor skills, motor coordination, and social interaction for individuals aged 10-16 years. Thirty individuals participated and were divided into two groups: 15 individuals participated in the yoga program and 15 individuals were a control group. The results of the bot2 test showed that yoga was effective in improving motor skills with statistical significance, which supports the hypothesis that yoga can be an effective intervention to improve motor skills in children with autism.

Keywords: Autism - Yoga - Motor Skills - Coordination. Social Interaction.

1-Introduction

Autism spectrum disorder is a neurological and developmental disorder that can be diagnosed in early childhood and continues throughout life, due to a defect in the way the brain processes information. Individuals suffer from motor and psychological problems, high sensitivity, difficulty understanding emotions, and also suffer from major challenges in social skills. Individuals also suffer from difficulties in social communication and understanding the feelings of others, which leads to isolation (American Psychiatric Association, 2013, Research and studies indicate that this disorder is constantly increasing worldwide, ranging from 1 to 2%. In 2019, while the number rose to 1 in 100 children in 2023 (World Health Organization, 2019, 2023).

1.1 Motor difficulties for individuals with ASD

Individuals with autism spectrum disorder suffer from many problems in motor efficiency, as individuals suffer from difficulties in fine motor skills such as writing or using tools and problems in large motor skills such as walking, running and balance, which affects their performance Their life and sports activities [1] and some of them have difficulties in coordinating between the limbs of the body, which may cause them various problems in their lives and in performing daily tasks compared to their peers [2]. Studies indicate that most individuals with autism have problems at a rate of 67% in the motor aspect [3]. These problems sometimes appear early in childhood and are considered an important indicator of autism spectrum disorder [4]. Scientific research indicates that the defect in the areas responsible for movement in the brain is what causes problems in planning and coordination in individuals with autism [5]. Problems in the neural development of the fetus during the mother's pregnancy are one of the main reasons that cause these fine and large motor problems. Genetic factors also play an important role in the development of the areas responsible for movement in the brain, which causes movement problems in individuals with autism [6]. The presence of these difficulties directly affects the practice of individuals with autism of group games and physical activities and difficulties in interacting with others and difficulties in understanding their feelings, which may cause them frustration and isolation due to fear of failure and embarrassment. Lack of physical activity may lead to They have health, social and psychological problems., the importance of conducting interventions that rely on physical activity has a noticeable impact on developing and treating motor coordination and balance difficulties has emerged, such as yoga, which is an effective tool in enhancing motor efficiency and motor balance in individuals with autism through the use of specific techniques and movements that have a positive impact on individuals. It is a gentle, suitable aerobic activity that has a good impact on psychological and motor health [7-8] Many studies have shown significant improvements in motor coordination and balance after practicing yoga regularly through organized intervention programs [9-10] Organized yoga movements work to strengthen muscles and improve balance, which helps improve children's ability to control their bodies during movement. [11] Therefore, it is necessary to highlight interventions based on physical activity as an important type of skill improvement in individuals, including physical activity programs including ball games, recreational games, structured programs, and yoga programs that work to improve motor skills in children with ASD[12]

1.2 Social and behavioral problems and with ASD

The most prominent problems that individuals with autism suffer from are repetitive behaviors, fluttering, tension, and aggression, in addition to problems in social interaction with their peers which are things that can affect their lives as they suffer from difficulties in emotional regulation, difficulties in self-control, increased anxiety, and difficulty in integrating with their surroundings [13]. Here lies the importance of interventions and preparing programs and motor and group activities to enhance these problems. In addition to the motor benefits, yoga has also shown a positive effect on the social and emotional aspects. Yoga is an ancient practice that combines physical exercises, breathing and meditation. It aims to promote relaxation, improve physical health

and reduce stress by performing various postures and techniques such as Asanas and relaxation techniques (Pranayama). It is a tool that improves the physical and social awareness of individuals [14]. The motor aspect can be developed by practicing yoga Asanas regularly, such as Tree Pose (Vrksasana), Warrior III Pose, which is important in enhancing balance and flexibility and increasing focus, as well as the Warrior Standing Poses to strengthen the body and increase stability. It is a multi-therapeutic approach [15]. Practicing relaxation techniques such as Yoga Nidra is also important in enhancing the emotional aspect and enhancing psychological awareness. Reciprocal breathing techniques are also important in reducing anxiety and increasing focus, which is reflected in the development of social skills [16]. Research confirms that practicing yoga and its techniques are of great importance in reducing anxiety and stress, enhancing relaxation and contributing to improving emotional control for individuals with autism spectrum disorder [17]. Practicing joint physical activities and group games through yoga programs It can have a significant impact on the psychological aspect in addition to the motor aspect, as participants in this program can improve behaviors and social interaction between them, increase cooperation between individuals, and reduce stereotyping by developing strength and motor coordination [18]. Research has focused on drug-based methods as a type of treatment to improve coordination in individuals with autism. Enhancing motor skills, enhancing social interaction, and reducing stereotypical behaviors can be done through the use of structured intervention programs such as the yoga program, which focused on developing these skills through a variety of structured programs for individuals with autism spectrum disorder.

2-Methodology

2.1 Participants

In this study, we recruited a total of 30 participants (23 males, 7 females) aged 10–16 years, all with autism spectrum disorder (ASD), from the Autism Association of Tunisia. Participants were divided into: a yoga training group (n = 15) and a control group (n = 15). All participants and their legal guardians were fully informed, either in writing or verbally, about the study design, including the potential risks and benefits associated with participation. Parents or legal guardians then provided their written informed consent. Participants were free to withdraw from the study at any time without facing any consequences.

2.2 Study design

The study sample consisted of 45 individuals diagnosed with autism spectrum disorder (ASD), selected using a random sampling method to ensure unbiased distribution between groups, divided into, the intervention group of 15 individuals who participated in a yoga-based training program. This program was designed especially to enhance motor skills, balance, coordination, and social interaction. It consisted of 24 sessions spread over 12 weeks, with two sessions per week lasting 30 minutes each. The control group, consisting of 15 individuals, continued with their daily routine activities without any additional interventions, to serve as a baseline to evaluate the effects of the yoga interventions. Tests were performed. The Bruininks-Oseretsky Test of Motor Efficiency (BOT-2) and the One-Leg Standing Test: assesses balance. The SRS and ADOS Autism Scale were used to assess improvement in social interaction

2.3 Intervention

In this study, the experimental group participated in a meticulously structured yoga-based training program specifically designed to address motor impairments in children with autism spectrum disorder (ASD). Sessions were led by certified yoga instructors experienced in working with children with ASD, ensuring a high level of expertise and a nuanced understanding of the participants' unique needs. The structured yoga training program spanned 12 weeks, with two 30-minute sessions per week. The program focused on developing coordination, balance, and

flexibility. Yoga poses, breathing exercises, and mindfulness techniques were progressively introduced throughout the 12 weeks see Table 1

Table (1)Yoga Training Session

Session Component	Duration	Activities
Warm-Up	5 minutes	Light jogging and jumping exercises to enhance circulation and prepare the body for physical activity.
Yoga Postures (Asanas)	15 minutes	- **Tree Pose** and **Warrior III Pose** to improve balance, strength, flexibility, and coordination.
		- **Standing Poses** (e.g., Warrior Poses) to strengthen the body and promote stability.
		- **Partner Activities** for balance and coordination, such as holding poses together to enhance mutual focus.
Breathing Exercises (Pranayama)	5 minutes	- Techniques like **alternate nostril breathing** and **forceful exhalation** to promote relaxation, reduce anxiety, and improve focus.
		- **Breathing for emotional awareness**: Guided breathing exercises to increase emotional regulation and relaxation.
Yoga-Based Games	5 minutes	- **Movement-based games** designed to enhance memory, awareness, creativity, and social interaction.
		- **Catch-and-throw activities** to improve **hand-eye coordination** and encourage team collaboration.
		- **Trust-building activities** involving group poses or partner exercises to develop social skills and cooperation.
Mindfulness and Yoga Nidra	5 minutes	- Guided **Yoga Nidra** for deep relaxation, helping to promote mindfulness and emotional awareness.

This program aims to enhance physical fitness and social skills through engaging activities that promote teamwork, communication, and cognitive focus. By incorporating ball games and group exercises, the program fosters a supportive environment for children to develop social skills while improving their social interactions and self-esteem. Participants attended 92% of the physical education sessions and 86% of the yoga sessions. In contrast, the control group did not engage in any form of physical exercise throughout the study period.

3. Results

After the intervention, the results showed a significant improvement in motor coordination and balance in the yoga group according to the BOT-2 tests and One-Leg Stand Test (Balance) they also showed a significant improvement in social interaction and a significant development in behaviors according to Autism Diagnostic Observation Scale (ADOS), Social Responsiveness Scale (SRS) see table (2).

Table (2) Shows results of motor coordination and balance tests, as well as a social skills test for both the yoga group and the control group.

Measure	Group	Pre-Intervention (Mean ± SD)	Post-Intervention (Mean ± SD)	% Improvement	p-value (ρ)	Cohen's d
Autism Diagnostic Observation	Yoga Group	42.5 ± 8.0	48.8 ± 7.4	14.9%	< 0.001	0.98

Scale (ADOS)						
	Control Group	44.1 ± 8.5	45.2 ± 8.4	2.5%	0.40	0.12
Social Responsiveness Scale (SRS)	Yoga Group	58.4 ± 9.8	67.8 ± 9.2	16.0%	< 0.005	1.00
	Control Group	60.1 ± 10.0	60.9 ± 9.9	1.3%	> 0.10	0.05
One-Leg Stand Test (Balance)	Yoga Group	25.4 ± 5.3	34.2 ± 5.5	25%	< 0.001	1.22
	Control Group	27.3 ± 6.2	27.7 ± 6.3	1.5%	> 0.1	0.07
BOT2 Motor Skills and Coordination	Yoga Group	35.6 ± 8.2	44.2 ± 7.3	18%	< 0.01	0.85
	Control Group	34.9 ± 7.6	35.5 ± 7.4	1.7%	> 0.05	0.07

3.1. Results of BOT-2 Test

This study examined how a yoga program impacted social behaviors and motor coordination in individuals with autism. With a 25% improvement in the single-legged standing test and an 18% improvement in the BOT-2, the yoga group demonstrated significant improvements in both motor coordination and balance. High effect values (Cohen's d = 1.22) and statistical significance ($p < 0.001$) were observed compared to the control group, which showed no significant improvement in these measures. By p-value ($p < 0.01$), the improvement was statistically significant. Cohen's d = 0.85 indicated a large effect, confirming that yoga is an effective intervention for improving motor coordination and balance. The results of our study are consistent with the study of Shankar and Pradhan (2022) and Kaur and Bhatt (2019) who confirmed that yoga has a significant effect on the development of motor skills, motor coordination and balance through the use of a structured creative yoga intervention program over a specific period of time for individuals with autism spectrum disorder.. The results of Wright (2017) also showed a positive effect of the yoga program on basic motor skills, as balance and muscle strength improved by 20%. In children with autism, a 10-week study conducted by Porter (2013) showed a significant improvement in motor coordination and balance by 18%, while Sullivan (2017) showed an improvement in motor skills and executive functions in children with autism. In addition, after applying simple yoga exercises, which supports the hypothesis of the effectiveness of yoga in enhancing motor coordination in children with autism. Although the control group followed up for the same intervention period, this group did not show any significant improvement in motor skills.

The control group showed a very small improvement of 1.7% (from 34.9 ± 7.6 to 35.5 ± 7.4) in BOT-2 scores, indicating that the improvement was not statistically significant. A p-value greater than 0.05 and Cohen's d = 0.07 indicates a very small and non-significant effect. The absence of targeted interventions for the control group, which did not receive special training or focused interventions, reflects the need for specialized and carefully designed interventions, such as those provided by yoga programs, to stimulate significant improvement in these aspects in individuals with ASD .Previous studies emphasize the importance of structured interventions in improving social behaviors and motor skills in children with autism.Kaur & Bhat (2019) showed that creative yoga leads to significant improvement in motor skills and balance, which supports the findings of our study (Kaur & Bhat, 2019). Shanker & Pradhan (2022) also confirmed that yoga practice can improve motor competence and social behaviors in children with autism, showing significant positive results in these areas after the program was implemented (Shanker & Pradhan, 2022).

Based on these results, it is clear that the control group did not experience any improvement in motor skills or social behaviors due to the absence of targeted interventions, which reinforces the hypothesis that interventions such as yoga programs can be effective in stimulating improvement in these areas. Studies by Srinivasan, S. M. (2024). suggest that children who do not receive specialized interventions may experience small and unsustainable improvements in motor coordination, while Navanethem, J. (2017). Studies suggest that children who do not receive specialized treatment programs may not show significant improvements in motor skills such as balance.

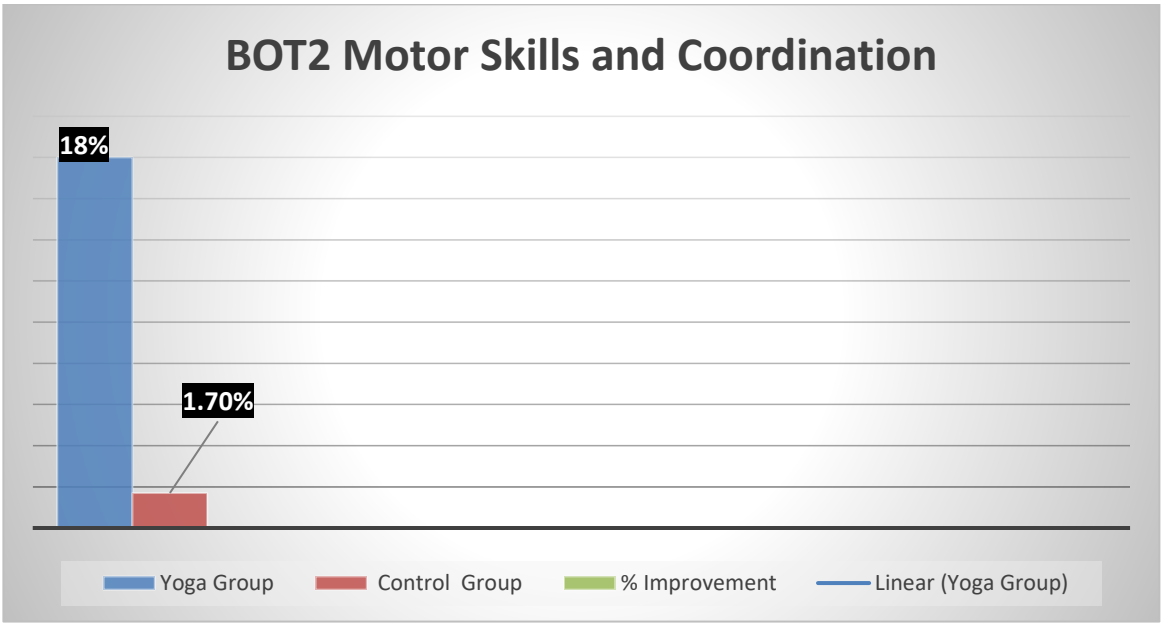

Figure 1. show the Percentage improvement in the Bruininks-Oseretsky Test of the yoga and control groups.

3.2. Results of the One-Leg Stand Test (Balance)

Yoga group: The yoga group showed significant improvement in balance, with a 25% increase in one-legged stand test performance (from 25.4 ± 5.3 to 34.2 ± 5.5). This improvement is indicative of a large effect size (Cohen's d = 1.22), indicating a significant benefit from the yoga intervention. A p-value of less than 0.001 supports strong statistical significance for this improvement, meaning that the results are not due to chance. These findings are consistent with previous studies that have shown positive effects of yoga on motor skills and balance, particularly in individuals with autism spectrum disorder (ASD). For example, studies such as Dolanay (2007) and Tekurson Demir et al. (2018) have shown that yoga significantly improved balance and coordination in children with autism. Additionally, other studies such as Deorari & Bhardwaj (2014) and Bubela & Gaylord (2022) have shown that yoga improves balance and motor coordination in individuals with developmental challenges.

Control group: The control group showed a very small improvement of 1.5% (from 27.3 ± 6.2 to 27.7 ± 6.3), with a Cohen's d = 0.07 indicating a very small effect. A p-value greater than 0.1 indicates that the improvement is not statistically significant, indicating a very small improvement compared to the initial test. These results are consistent with studies such as Daly et al. (2015), who showed that groups that did not receive specialized interventions showed only small improvements, usually not statistically significant. Lindgren et al. (2013) also suggested that individuals who do not receive specialized interventions may experience limited and non-sustained improvements in motor skills such as balance. Specialized. The improvement seen in the yoga group adds to the evidence in the literature supporting yoga in therapeutic programs for children with ASD

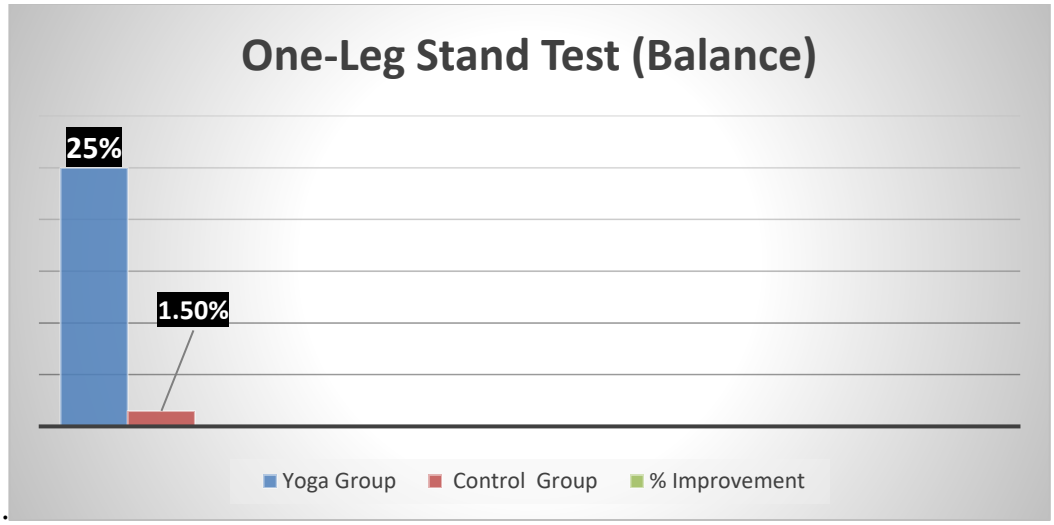

Figure 2. show the Percentage improvement in the (one-leg stand) test for the yoga and control groups.

3.3. Results Social Responsiveness Scale (SRS)

The results showed that individuals who participated in the yoga intervention program showed a significant improvement through the results that appeared, as the improvement rate was clear at 16.0%, and the value of 0.005 indicates that the results are statistically significant. The clear improvement in social interaction was clearly evident through the value of Cohen's d of 1.00, as individuals showed a clear development in participation in group exercises and activities, which reflects their clear improvement and highlights the importance of the program followed, which positively affects enhancing the importance of interventions for individuals with autism spectrum disorder and its reflection on their quality of life and enhancing the importance of their integration and interaction with their peers in a better way. These results are consistent with studies conducted in this field, Core, Egoistik, and Bhatt (2021) on the effectiveness of yoga intervention in improving social interaction between children and increasing improvement in cooperation with others and a significant improvement in social skills. The study also showed Suleiman et al. (2014) that there is a significant improvement of 20% through practicing an organized yoga training program that improved individuals' participation in social interaction and increased Improvement in cooperation with others and development of social skills In addition, the study of McGreevy et al. (2019) and Burke et al. (2020) showed that individuals' participation in a yoga program over a period of weeks had a significant effect on social interaction and communication and on social interaction behaviors, and increased desire and effectiveness in participating in group activities. And improved the quality and quality of life for individuals with autism spectrum disorder. In contrast, the results indicated that the control group that did not participate in any type of organized physical activities or movement interventions or organized yoga programs and practiced their lives routinely showed an insignificant and statistically insignificant improvement, as the improvement rates for them were 1.3%, and the value of Cohen's d was 0.05, indicating a very small effect. These results are consistent with studies that conducted targeted interventions and were effective only for the intervention group, while their control group did not show any improvement, such as Hart et al. (2022), which confirms that yoga-based interventions represent an effective strategy for improving social interaction in children with autism spectrum disorder, helping them overcome the difficulties they suffer from, which is positively reflected in their practice of their life tasks better compared to their peers and interacting positively with their surrounding environment

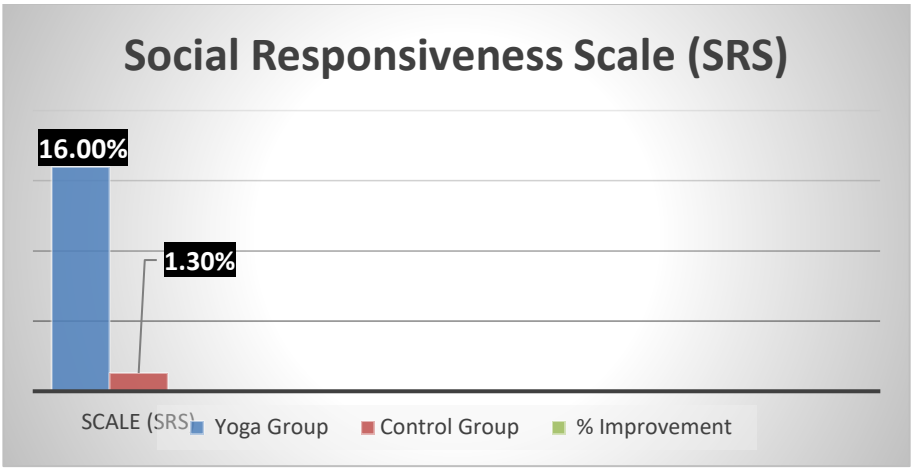

Figure 3. show the Percentage improvement in the (SRS) scale for the yoga and control groups.

3.4. Results of Autism Diagnostic Observation Scale (ADOS)

The results of the Autism Diagnostic Observation Scale (ADOS) test showed a significant improvement in the yoga group, with the results indicating a 14.9% improvement after the intervention, reflecting the positive effect of the yoga program. These results support several recent studies that have shown the role of yoga in improving social interaction and the ability to deal with social situations in children with autism spectrum disorder. Studies such as Hart et al. (2022) confirmed that yoga contributes to improving emotional interaction in children with autism, which enhances their ability to understand and manage their emotions. Morales (2023) showed that children who participated in yoga programs showed significant improvement in the ability to build relationships with their peers and an improvement in social communication skills. Rostami et al. (2023) confirmed that yoga can significantly improve social interaction in children with autism. Uzungair and Yilmaz (2023) showed that practicing yoga contributes to increasing their participation in group activities, which enhances children's ability to deal with social situations. These studies contribute to supporting the idea that yoga not only improves the motor aspects of children with autism, but also plays a pivotal role in improving social interaction and enhancing the ability to deal with complex social situations. The positive impact on social behaviors and emotional interaction also contributes to improving the quality of life of children and their families, making yoga an effective tool in therapeutic and educational settings for children with autism. In contrast, Table No. shows that the control group did not show any improvement in social skills, which indicates that they did not receive any intervention and practiced their lives routinely, which indicates the importance of conducting organized interventions aimed at developing skills and overcoming difficulties in individuals with autism

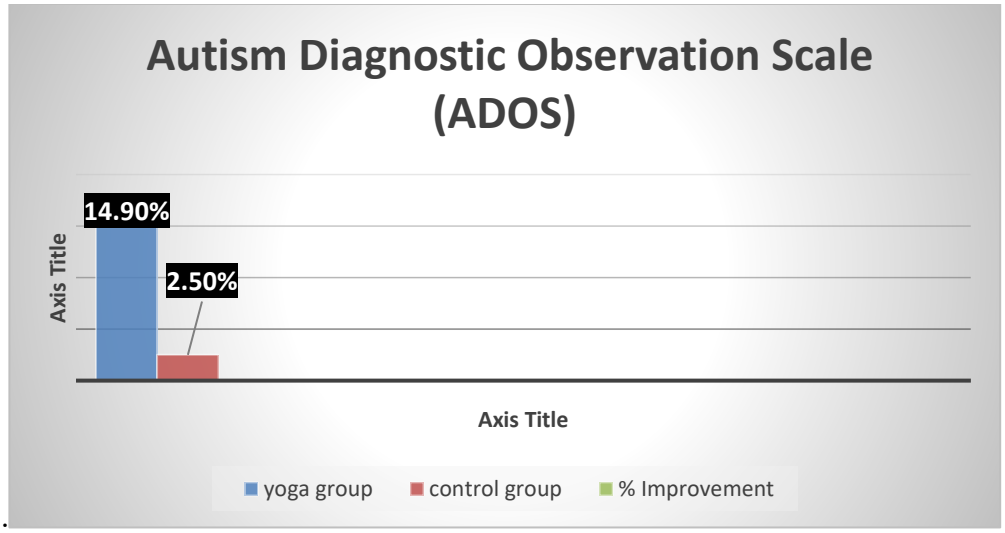

Figure 4. show the Percentage improvement in the (ADOS)scale for the yoga and control groups.

4. Discussion

This study focused on evaluating the effectiveness of a yoga program in improving motor activity and social interaction in children with autism spectrum disorder (ASD). The Direct Focus Scale of Program Effects, the Social Investment Scale (SRS) and the Autism Diagnostic Investment Scale (ADOS), as well as motor skills such as the BOT-2 and the One Progress Test were used. Significant results were achieved in the yoga group on various parameters, which led to an increase in the effectiveness of yoga as a tool influencing social and motor skills in children with autism.

4.1. improving motor activity and balance

The results of the BOT-2 test showed an acceptable improvement in the yoga group by 18% (from 35.6 ± 8.2 to 44.2 ± 7.3), reflecting a positive effect on the overall motor score. In addition, the yoga group recorded a 25% improvement in the one-foot stand test (from 25.4 ± 5.3 to 34.2 ± 5.5), reflecting the accuracy of balance. This significant influence of yoga was demonstrated by Cohen's d = 0.85 on the BOT-2 test and Cohen's d = 1.22 on the balance test, indicating a strong statistically significant effect. These studies are consistent with several previous studies that have shown that yoga significantly impacts motor balance in children with autism spectrum disorder. For example, Participation in structured yoga training has an important role in improving balance in individuals with autism spectrum disorder, which is consistent with studies. Kaur & Bhat (2019) showed that creative yoga exercises (which include slow movements and deep breathing) had a significant positive effect on improving balance. Wright (2017) also showed that yoga improved balance in children with autism. Shankar & Pradhan (2022) indicated that yoga contributes to motor balance and equilibrium. Tekursun Demir et al. (2018) showed that yoga improves balance and motor coordination in individuals with developmental needs.

4.2. Improved Social Interaction According to the Social Compensation Scale (SRS)

In terms of children's social interaction, the yoga group experienced a 16% improvement in their SRS scores, with the inflation rate increasing from 58.4 ± 9.8 to 67.8 ± 9.2. You will notice a significant increase in children's interaction with others. With a Cohen's d = 1.00, the improvement was found to be very significant, increasing the effectiveness of yoga as a tool for improving social interaction in children with autism. These study support studies such as Rostami et al. (2023) and Shankar and Pradhan (2022), which aim to help yoga with self-awareness and emotional regulation, leading to improved social interaction. Through breathing techniques, young children begin to learn

how to manage and regulate their emotions, which results in their ability to interact positively with others in their environments

4.3. Improvement of social behaviors according to the Autism Diagnostic Observation Scale (ADOS)

As for the Autism Diagnostic Observation Scale (ADOS), the yoga group showed a 14.9% improvement in points (from 42.5 ± 8.0 to 48.8 ± 7.4), reflecting a significant improvement in social behaviors associated with autism. With Cohen's d = 0.98, it can be confirmed that this improvement was very strong, which enhances the effectiveness of yoga in improving social behaviors associated with autismRegular practice of yoga, breathing techniques and relaxation techniques play an important role in improving abilities and overcoming difficulties, and develops motor efficiency and motor coordination, which directly affects the enhancement of the psychological aspect, increases relaxation, reduces stress, increases concentration and increases social interaction through the program followed. This is consistent with studies and research conducted in this field, such as Joe et al. (2024) and Rostami et al. (2023), who showed that yoga improves the cognitive, behavioral and interactive aspects of individuals with autism spectrum disorder, as well as improving balance and motor coordination. All of this leads to developing their lives better, making it easier for them to deal with situations and improving the performance of daily life tasks.

4.4. Compared to the control group

In contrast, the control group showed a very small improvement of 1.7% on the BOT-2 test, with Cohen's d = 0.07, indicating that the improvement was not statistically significant. The control group also showed a very small improvement of 1.5% on the balance test, reflecting the small improvement in motor and social skills compared to the yoga group. These results are consistent with studies such as Daly et al. (2015) and Lindgren et al. (2013), which have shown that non-specialized interventions lead to limited and non-sustainable improvement.

4.5. The importance of organized interventions in treatment programs

The results we obtained in this study were consistent with research and studies that confirmed the great importance of interventions and activities that are conducted to overcome the problems suffered by individuals with autism spectrum disorder, as they suffer from many and varied problems, especially problems in motor coordination, understanding feelings, social interaction, and repetitive stereotypical behaviors, which affects their lives and constitutes an obstacle to dealing with their peers. Yoga is considered an effective tool and an important intervention that clearly and greatly improves the skills of individuals in the motor and psychological aspects and enhances relaxation through techniques followed in an organized manner. The Asnas breathing technique and the Nidra relaxation technique had a clear positive effect in enhancing skills, whether motor or social, by following specific positions such as the Tree Pose and the Warrior Poses position, which are important in developing strength and developing balance and coordination. The Warrior III Pose contributed to enhancing confidence and flexibility, and the Yoga Nidr position contributed to relaxation and positive emotional interaction. Activities based on group games were of great importance in enhancing Communication and reducing stereotypical behaviors and isolation, which is what our research results confirmed, that this study agreed with many studies that confirmed that yoga is an important tool in improving the motor and social skills of individuals with autism spectrum disorder, and this was confirmed by Hart et al. (2022) Morales (2023) Kaur and Bhatt (2019) and Tekur et al. (2018) Deori and Bhardwaj (2014) who used yoga techniques to improve the abilities and skills of individuals with autism disorder. Their intervention programs contributed to a noticeable improvement in social interaction and behaviors, increased cooperation between individuals, and reduced stereotypes. As their results indicated, the yoga programs and techniques used had a clear effect in increasing emotional awareness and increasing their self-confidence,

which is positively reflected in their quality of life, which confirms the need to conduct many interventions within specialized organized training programs to overcome most of the problems of individuals, which confirms that yoga is an effective tool for improving skills in a clear and important way.

5. Conclusion,

Yoga contains many techniques that aim to enhance psychological awareness. It is not just physical training, but rather an effective tool for improving mental, physical and emotional health. It is a tool that enables individuals to overcome many of the difficulties they have. Experiments have proven the importance of this technique, which contains deep breathing techniques and positions that are important for developing some specific difficulties in the field of motor coordination and balance, which is reflected in developing their social skills to improve their quality of life and social integration. This reinforces the importance of using yoga as part of specialized treatment programs for children with autism spectrum disorder.

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