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Retraction

Retracted: Application of the VR Sensor Image Combined with Sports Games in the Treatment of Autistic Children

Journal of Sensors

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Wang, "Application of the VR Sensor Image Combined with Sports Games in the Treatment of Autistic Children," *Journal of Sensors*, vol. 2022, Article ID 8993833, 8 pages, 2022.

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Research Article

Application of the VR Sensor Image Combined with Sports Games in the Treatment of Autistic Children

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In order to study the application of the VR sensor image combined with sports games in the treatment of autistic children, this study mainly takes qualitative research as the main research method and uses physical intervention based on sensory integration training to study autistic children aged 6-9. Three children, A, B, and C, are mainly selected in order to promote the improvement of children's physical function and motor skills and further have a positive impact on behavior and psychology. By analyzing the effects measured before and after the experiment, this paper explores the impact of sports intervention based on sensory integration training on the motor ability of autistic children over the age of 6, as well as its impact on their sensory integration function, daily behavior, and psychological activities, so as to enrich the empirical research on the content, principles, implementation methods, and specific implementation process of sensory integration training, to provide reference and enlightenment for schools, institutions, and children's parents engaged in educational intervention for autistic children.

1. Introduction

Autism is a pervasive developmental disorder, a psychological problem of cognitive, emotional, and behavioral disorders. According to the American Psychiatric Association's new diagnostic criteria for mental disorders, DSM-5, autism has two core disorders: (1) deficits in social communication and social interaction and (2) limited and repetitive behavior, interest, or activity. There is such a special kind of child in the world. They have wild hearts but cannot communicate with others. They have an intact hearing but do not care about everything outside. They have the same beautiful and moving faces and clear eyes as other children but have strange actions that others cannot understand. The medical community calls these children "autistic children" (Figure 1), and people call them "stars." They are like living on another planet, which has nothing to do with all the earth and noise. Autism, also known as autism spectrum disorder, is a special group of generalized developmental disorders, including sensory perception, emotion, language, thinking, action, and behavior. As early as 1943, Leo Kanner, an American child psychiatrist, published the paper "Autistic Disorder of Emotional Communication" based on 11 special cases he observed from the perspective of psychosis, which is the first time that the existing records have defined autism. For the first time in the world, 11 cases of children with autism have been reported as early-onset infantile autism. With the progress of modern medical technology and psychology, the majority of medical professionals and social institutions carried out analyses and research from the angle of the pathology of autism, etiology, treatment plan, treatment means, psychological behavior, and so on. In his paper, he proposed three important characteristics of autistic patients, namely, social interaction disorder, communication disorder, and limited interest and stereotyped behavior before the age of 3 [1].

In 2006, the Second National Sample Survey of the Disabled clearly listed autism as a mental disability. At the first 2014 International Symposium on Autism Education and Rehabilitation, Director Sun Menglin pointed out that from the end of the last century to this century, autism in China has experienced a transformation from a rare disease to an epidemic, and the prevalence of autism in China is similar

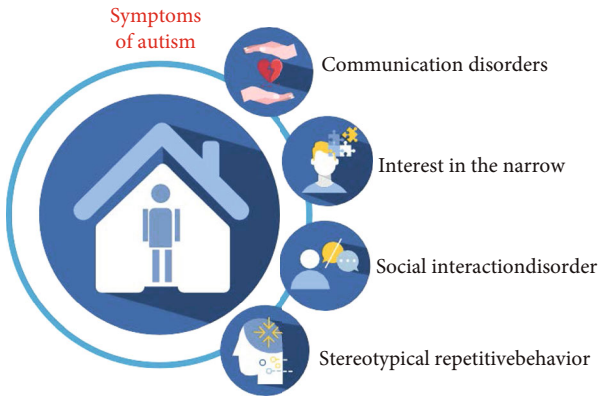

Figure 1: The development of autism.

to that in other countries in the world, about 1070. Based on this calculation, there may be more than 10 million autistic patients in China and more than 2 million children aged 0 to 14. In recent years, the incidence of autism has increased year by year due to the aggravation of environmental pollution and the changes in people's physique. Early intervention has an important impact on autistic children. Frontline teachers and experts are trying to find ways of education and training suitable for autistic children, trying to minimize their degree of autism (the analysis report on the current situation of autistic children in China comes from the website). With the increasingly strict international standards for the diagnosis of autism, some diseases that could not be diagnosed in pedigree disorders are excluded, and the statistics on the incidence of autism will be more clear in the future [2].

The Internet, virtual reality technology, and multimedia technology are called the three key technologies of this century. As the foreword subject of scientific research in this century, the application research of virtual reality technology has gained great development and is favored by scholars. Virtual reality, as a multidisciplinary technology, involves many fields such as network application, automation, and distributed technology. Virtual reality technology is used to construct a force in interconnected devices (real environment), through the seamless combination of some sensors and connected devices, so that experiencers can be placed in a simulated virtual space. At the same time, experiencers can interact in a simulated environment through sensing devices.

Technology provides more ways to solve human psychological problems. Virtual reality technology also has an effective exploration and application in the treatment of autism spectrum disorders. Compared with traditional ASD (autism) therapy, virtual reality provides a platform for most ASD patients to practice dynamic and real social scenes. An immersive virtual reality environment can stimulate the imagination and willingness of ASD patients to participate so that they can actively explore and experience the virtual scene. At the same time, virtual reality technology shows a realistic life scene in a safe and controllable way, and ASD patients can be repeatedly exposed and can learn at a low cost, which is the key to treatment. In addition, different from the traditional face-to-face communication, in the social environment provided by virtual reality technology, ASD patients do not have to worry about mistakes and rejection, nor do they have high-intensity anxiety, so they have a stronger willingness to participate, and through continuous practice to master the correct social skills and response methods, they can establish the confidence to maintain relationships with others and then have a good therapeutic effect [3].

2. Literature Review

Abuaish and others believed that the main social communication obstacles of autistic children are as follows: unable to carry out social communication, failure to establish partnerships, lack of attachment, and difficulties in emotional and social interaction [4]. Januario and others described the social disorder of autistic children as follows: (1) unable to engage in social communication; (2) failure to establish partnerships; (3) delayed or lacking attachment to parents, often developing an attachment to something without looking for help; and (4) difficulties in emotional and social interaction: autistic children have difficulty understanding other people's facial expressions, cannot properly express their emotions, and have difficulty in adapting in public [5]. Panduro and others believed that sensory integration training is a training method that uses the plasticity of the nervous system in the process of individual development to stimulate brain function and promote the development of brain nerve cells through the training of hearing, vision, basic feeling, balance, and spatial perception so that subjects can effectively integrate various senses and make correct responses. The fundamental goal of sensory integration training is to give play to children's initiative, let children wake up and improve their body level through various external intensity stimuli in sensory integration training, and then promote the all-round development of the nervous system [6]. Wahlquist and Kaminski concluded from the study from 1972 to 1981 that sensory integration therapy can improve children's attention and language expression ability, reduce hyperactivity, and improve academic performance for underachievers in childhood [7]. Zouhal and others believed that a game is a unique activity mode suitable for children's characteristics, and it is also the best activity form to promote children's psychological development [8]. Herzog and others explored the application of Lowenfeld's sandplay therapy in kindergartens in their master's thesis. Through 11 sandplay treatments on a child with aggressive behavior, they aimed to reduce his aggressive behavior [9]. Mountjoy and others proposed that the children's brain is still in the development stage and their speech development level is not well developed. Therefore, sometimes, we cannot understand the behavior and internal psychological state of special children through words, while the sand table and sand table game are like a window, which can open or view people's minds and enable people to reexperience the prelinguistic and nonlinguistic state [10]. At the end of the last century, Professor Strickland from the perspective of medical application for the first time proposed a new approach to using virtual reality technology for pathological treatment and intervention in autistic children. The feasibility analysis report for adopting this technology is presented.

Table 1: Results of balance ability and exercise ability before and after intervention training.

	A		B		C	
	Before	After	Before	After	Before	After
Standing on one foot (s)	6.7	7.8	4.4	8.6	4.3	7.5
Balance beam travel (s)	14.1	13.9	12.2	9.4	16	15
20-meter run (s)	9.3	9.2	8.9	8.7	10.5	10.6
30 s sit-ups	10	15	9	14	8	8
Standing long jump (cm)	82	85	91	96	76	77
500 g sandbag throwing distance (m)	5.8	5.5	5.4	6.2	4	4.1

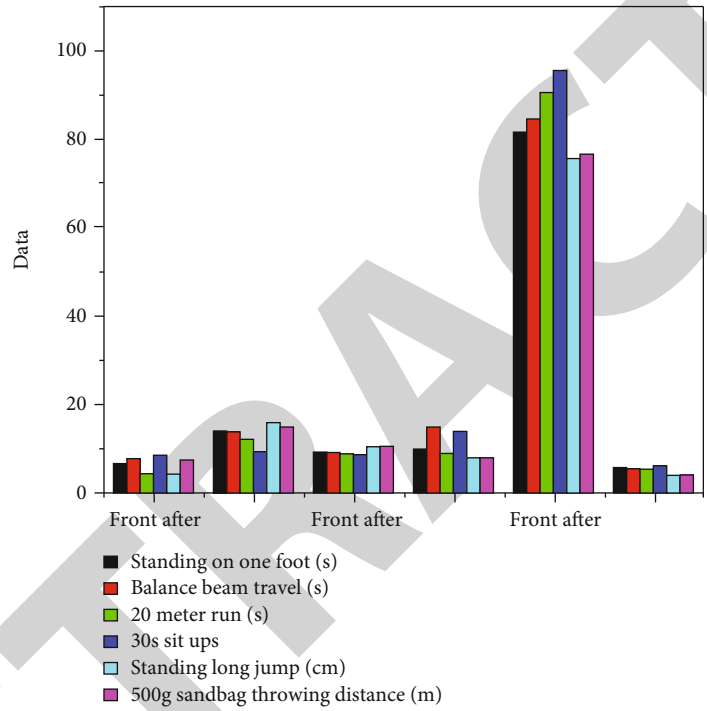

Figure 2: Outcome data graphs of balance ability and motor ability before and after intervention training.

Antero and others helped a child with autism to have good social communication by performing sandbox treatment up to 26 times [11].

3. Experimental Analysis and Results

3.1. Subjects. The subjects were three case children selected by purposeful sampling. The common reasons for the three subjects selected by the researchers are as follows. First, after the identification of doctors in children's hospitals, one has low function, and the other two are autistic children with medium and high function. Second, the parents of the three autistic children have a high degree of cooperation, which is conducive to the smooth progress of the study [12].

3.2. Experimental Method

3.2.1. Large Muscle and Balance Training. Do the frog jump exercise 20 times, with a distance of 6-8 m each time, gradually increasing to 10 consecutive times; do inclined sliding (about 30 degrees, where the height of the slide 10 angle is about 50 cm); shake the wooden column for 3 min, stop and rest for 3 min, then shake for 3 min, and cycle for 5 times; rotate the bathtub for about 2-3 s, then rotate left and right for about 10 min; walk on the balance beam with the ball; heel to toe, walk on the rope laid on the ground back and forth 10 times.

3.2.2. Sports Intervention Games. The training purpose is to provide tactile stimulation and enhance self-awareness and proprioception.

The training requirements are as follows: tie the two ends of the skipping rope together to form a circle, and let the child go from head to toe or vice versa.

The difficulty setting includes the following: first, train the child to put it in through the head and out the feet, and then train the child to put it in through the feet and out the head.

The help given is as follows: try to tie the loop to the end when tying, and it will be easy to put in and take out when

Table 2: Evaluation results of sensory integration ability before and after sports intervention training.

	Large muscle imbalance		Tactile overdefense		Proprioceptive imbalance	
	Before	After	Before	After	Before	After
Nono	19	21	21	22	28	30
Xiao Si	25	28	15	17	22	25
Speech	21	21	33	34	25	25

Table 3: Test results of CARS before and after sports intervention training.

	Before	After
A	36	33
B	48	41
C	37	36

the loop is bigger. The teacher reminded the students not to be rude but to learn skills.

(1) Skiing. The training purpose is to provide tactile stimulation and improve the coordination ability and body balance ability of limbs.

The training requirements are as follows: stick a piece of rectangular cardboard of appropriate size on the soles of children's feet as a sled, which can go forward or backward.

The difficulty setting includes the following: (a) backward walking, (b) walking with both feet on the ground, and (c) keeping one foot on the ground and the other on the pedal [13].

The help given is as follows: teach children how to use the swing of hands and feet to maintain balance and maintain progress the day after tomorrow.

(2) Rocking Boat. The objective is to control labyrinthine tension reflex and provide vestibular and proprioceptive stimulation.

The training requirements are as follows: children lie flat on the yoga mat, bend their knees and hug them to curl their bodies into a ball, and shake them in front and back or left and right directions.

The help given is as follows: at the beginning, the child may not be able to maintain the balance when holding the knee, or there are no force skills. The teacher needs to assist the body and swing the child's hips with appropriate force from the side or back so that the child can feel the influence of external forces on the body and the help of shaking [14].

(3) Kangaroo Jump. The objective is to give appropriate vestibular stimulation to alleviate allergic information.

The training requirements are as follows: the child shall stand upright in the cloth bag, hold the bag edge with both hands on the left and right sides, and jump with both feet at the same time.

The difficulty setting includes the following: at the beginning, it is only required to jump in place, and then the child transitions to forward jumping after proficiency, and the distance is required.

The help given is as follows: full protection and assistance.

3.3. Analysis of Experimental Results. Balance refers to the ability to maintain the upright posture of the body in different environments and situations [15]. It is the basic guarantee for the human body to maintain posture and complete various daily life activities, especially walking. Static balance ability is the ability to maintain body balance in a specific time, while dynamic balance ability is the ability to maintain body balance in exercise.

It can be seen from Table 1 and Figure 2 that the single-foot standing time of A in the case increased by 0.9 s, the passing time of the balance beam decreased by 0.2 s, and the balance ability was improved [16]. C's single-foot standing time increased by 3 s, and the balance beam passing time decreased by 1 s, indicating that the dynamic balance and static balance have been enhanced, and the dynamic balance has not been improved. The single-foot standing time of B increased by 4.2 s, the passing time of the balance beam decreased by 2.8, and the balance ability was significantly improved. Overall, it shows that sports intervention training has improved and strengthened the integrated processing ability of the balance perception center and the balance control ability of the body, but the degree and specific aspects of improvement are also different due to different individuals [17].

Since the 1870s, in order to better study sensory integration, Ayres A.J. has designed a series of clinical evaluation tests and compiled checklists that can be tested by parents as testers. The children's sensory integration development assessment scale was developed in 1985 by Professor Zheng Xinxiong of Taiwan based on the checklist of Ayres A.J. and combined with a variety of symptom checklists for autistic children. The children's sensory integration assessment scale includes large muscle movement and balance disorders, tactile defense, proprioceptive disorders, lack of learning ability, and sensory integration disorders [18]. According to the age and psychological characteristics of the case children, three criteria were selected: large muscle movement and balance disorder, tactile excessive defense, and proprioceptive balance disorder.

It can be seen from Table 2 that after the sports intervention, A has increased by 2 points, 1 point, and 2 points, respectively, in large muscle and balance disorder, tactile excessive defense, and proprioceptive balance disorder, and B has increased by 3 points, 2 points, and 3 points, respectively, in large muscle and balance disorder, tactile excessive defense, and proprioceptive balance disorder [19]. The intervention effect is remarkable. C increases one point in tactile overdefense in three items. The symptoms of large muscle and balance disorder, tactile overdefense, and proprioceptive balance disorder in sensory integration ability of three autistic children have been improved to varying degrees, among which the improvement of large muscle and balance

Table 4: Evaluation of CARS before and after sports intervention training.

	Nono		Xiao Si		Speech	
	Before	After	Before	After	Before	After
Interpersonal relationship	Light	Light	Moderate	Moderate	Light	Light
Imitation (words and actions)	Moderate	Moderate	Moderate	Light	Moderate	Light
Emotional response	Light	Light	Moderate	Moderate	Light	Light
Body movement ability	Light	Light	Moderate	Light	Moderate	Moderate
Relationship with inanimate objects	Light	Light	Moderate	Moderate	Light	Light
Adaptation to environmental changes	Light	Light	Moderate	Light	Light	Light

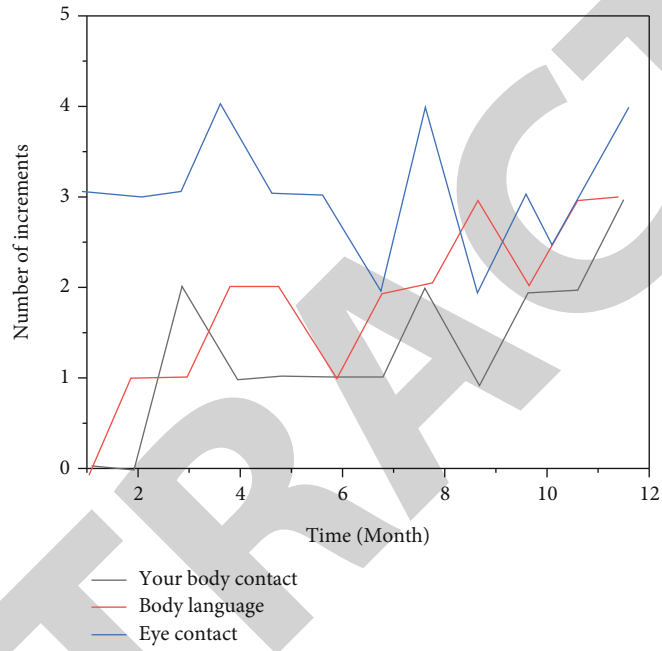

Figure 3: Changes in three children after experiencing sports games.

disorder is the largest, and the improvement of tactile overdefense is small [20].

Conclusions can be drawn from the test results of CARS in Tables 3 and 4. Among them, the score of A before sports intervention was 49 and then 44, a decrease of 5 points. It has been improved in physical use ability, auditory response, anxiety response, and nonverbal communication. Although the score is still severe autism after intervention, the effect is also considerable. The scores of B before and after the intervention were 38 and 30 [21], which decreased by 8 points, and improved in imitation, physical use ability, and nonverbal communication, respectively, which was the largest increase in the evaluation of CARS among the three cases. It has been reduced from severe autism to moderate autism. The score of C before the sports intervention was 37 and then 36, which decreased by 1 point, and improved the level of imitation, auditory response, and activity, respectively.

It can be seen from Figure 3 that the three children have made progress in all aspects, whether in sports ability, behavior, language, or social interaction: from the initial response to the teacher's instructions but no response during the physical intervention [22] (I will neither say hello in class nor see you again after the course) to the beginning that I can pay attention to the requirements put forward by the teacher and remind myself of my mistakes with self-talk; from not fully understanding the teacher's instructions to being able to follow the teacher's instructions and suggestions and implement them; and from hardly responding to other people's questions to selective and simple responses. This bit by bit is where his progress lies. He still has a rigid behavior and a single hobby in behavior. He has made great progress in language. Only when he cannot understand each other's words will he repeat others' words and say what he sees. For example, when the teacher takes out the skipping rope, he immediately says, "rope, rope." When he takes out the basketball, he immediately responds to "ball, ball." However, there are still difficulties in personal pronouns. For example, "you," "I," and "he" are confusing. Social interaction with other students can also carry out simple collective cooperation games. Auditory response needs to be strengthened. In sports intervention, teachers often need repeated sound stimulation for them to respond, but they can better imitate and follow the teacher's demonstration [23]. In

terms of using virtual reality to conduct intervention research on children with autism, this paper has only made a very superficial attempt, and there are still many improvements and attempts to be made in the future.

Results from the few cases available suggest that autism is partly caused by tuber stiffness. The two pathologies are chromosomes 16 and 17, respectively. Two regions of the brain have been identified with a known gene next to them and may be responsible for the development of tuberous sclerosis and neurofibroma. At present, the related genetic work has not reached a unanimous conclusion, which may prove that autism production is not caused by a single gene.

4. Discussion

As a means of gradual rehabilitation of autistic children, sports intervention training is effective and feasible. Long-term sports intervention training can promote the rehabilitation of autistic children. Specifically, sports intervention training can improve the physical quality of autistic children and enhance their posture, sports skills, and balance ability. Sports intervention training can improve the behavior problems of autistic children and promote them to establish new healthy behavior styles. Sports intervention training can improve the social communication ability of autistic children and is conducive to the emotional development of children.

4.1. More Thorough Study of Physiological Mechanisms. The current research on the ASD virtual reality system mainly focuses on user performance or user feedback and rarely studies its physiological mechanism. The physiological mechanism of ASD patients in behavioral performance can help researchers further improve the establishment of a virtual reality platform, so it is of great significance [24].

Because adult patients with ASD have obstacles in social communication, it is a certain challenge for them to identify, describe, or show a specific internal emotional state, and the physiological indicators are rarely affected by these obstacles. Therefore, these indicators can become effective parameters for evaluating the psychological state of ASD patients. Studies have comprehensively analyzed the different physiological patterns of ASD children in the case of successful or failed facial expression recognition by using four indicators: electrocardiogram (ECG), pulse graph (PPG), skin temperature (SKT), and skin electrical response (GSR). By changing qualitative psychological indicators into quantitative physiological indicators, researchers can further analyze the physiological reasons behind the emotional trigger mode and behavioral representation of ASD patients more reliably.

4.2. Realize the Two-Way Development of System Universality and Customization. At present, the virtual training platform cannot cover all ages, and there is no inherent reality intervention for all ages. If we can provide a universal virtual reality system, we can not only reduce the cost but also make it more convenient for ASD patients to receive treatment. But at the same time, the symptoms of each patient are also significantly different [25]. For some patients, it is necessary to make personalized settings according to their personal characteristics and disease history. Therefore, if we hope that the virtual reality training system for ASD treatment can be commercialized, we can imitate the model of some commodity brands and combine universality and customization to meet the needs of various users and patients. This is also the necessary stage to solve the limitations brought by human diversity.

The immediate significance of the intervention effect is mainly reflected in three aspects. One is to deepen the positive emotional connection between autistic children and their teachers and peers. The intervention results showed that the use of virtual reality technology can significantly improve the subjects' positive emotions and make the intervention produce positive effects. Second, it improves the social cognitive development of children and promotes the psychology of children with autism-level development. Third, it provides a new adjunctive treatment for autism for relevant institutions and families. Current problems faced by rehabilitation facilities and families with autism can be helped.

5. Conclusion

Combined with the physical and mental characteristics of autistic children, giving children a safe, harmonious, and comfortable intervention training environment is the premise to obtaining a good intervention effect; in particular, the training implementer is very important. If you want to gain the trust of autistic children and to create a safe, harmonious, comfortable, and relaxed treatment atmosphere, the intervention training implementers must accept and respect autistic children, and psychological compatibility with children is undoubtedly the premise of intervention training. Family is the first place in children's education. The family atmosphere and family interpersonal relationship play a role in the influence of children's invisible environmental effects. Parents' emotions and attitudes affect their children's intuitive way of life, so the family environment plays a key role in children's autism rehabilitation and development.

The research has only been carried out for more than a few months. This is a very short period of time for the rehabilitation of autistic children. Each autistic child will encounter different problems at different ages. The rehabilitation of autistic children is long and difficult. Due to the limitation of research time and energy, this study failed to carry out long-term research, and the tracking in the maintenance period is slightly insufficient. It is only the tip of the iceberg for the lifelong rehabilitation of people with autism. Rehabilitation intervention training for autistic children is continuous and lifelong.

Autism is a neurodevelopmental disorder characterized by deficits in social communication and interaction, narrow interests, and stereotyped behavior. The development of the social-emotional ability of autistic children is the basis of their good communication and interaction with others and also the core of their social defects. Intervention in the social-emotional ability of autistic children can enhance

their ability to understand and use their own emotions and improve their social interaction deficits.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

No conflicts of interest were declared in the writing of this manuscript.

Acknowledgments

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References

[1] H. Zeng, S. Liu, R. Huang, Y. Zhou, and B. X. Yang, "Effect of the TEACCH program on the rehabilitation of preschool children with autistic spectrum disorder: a randomized controlled trial," *Journal of Psychiatric Research*, vol. 138, no. 6, pp. 420–427, 2021.

[2] T. Fadi, K. Firuz, and R. Khairan, "A new computational intelligence approach to detect autistic features for autism screening," *International Journal of Medical Informatics*, vol. 117, no. SEP., pp. 112–124, 2018.

[3] S. Roux, Y. Bailly, and J. L. Bossu, "Regional and sex-dependent alterations in Purkinje cell density in the valproate mouse model of autism," *Neuroreport*, vol. 30, no. 2, pp. 82–88, 2019.

[4] S. Abuaish, N. M. Al-Otaibi, K. Aabed, T. S. Abujamel, and A. El-Ansary, "The efficacy of fecal transplantation and Bifidobacterium supplementation in ameliorating propionic acid-induced behavioral and biochemical autistic features in juvenile male rats," *Journal of Molecular*, vol. 72, no. 2, pp. 372–381, 2022.

[5] T. Januario, S. Urrutia, C. C. Riberio, and D. D. Werra, "Edge coloring: a natural model for sports scheduling," *Operations Research*, vol. 58, no. 5-6, pp. 503–506, 2018.

[6] J. Panduro, G. Ermidis, L. Rddik, E. E. Madsen, and M. B. Randers, "Physical performance and loading for six playing positions in elite female football: full-game, end-game, and peak periods," *Scandinavian Journal of Medicine and Science in*, vol. 32, pp. 1–12, 2021.

[7] V. E. Wahlquist and T. W. Kaminski, "Purposeful heading in youth soccer: a review," *Sports Medicine*, vol. 51, pp. 1–14, 2020.

[8] H. Zouhal, A. Hammami, J. M. Tijani et al., "Effects of small-sided soccer games on physical fitness, physiological responses, and health indices in untrained individuals and clinical populations: a systematic review," *Sports Medicine*, vol. 50, no. 5, pp. 987–1007, 2020.

[9] M. M. Herzog, D. F. Mack, N. A. Dreyer, E. A. Wikstrom, and S. W. Marshall, "Ankle sprains in the National Basketball Association, 2013-2014 through 2016-2017," *The American Journal of Sports Medicine*, vol. 47, no. 11, pp. 2651–2658, 2019.

[10] M. Mountjoy, T. Vertommen, K. Burrows, and S. Greinig, "#SafeSport: safeguarding initiatives at the Youth Olympic Games 2018," *British Journal of Sports Medicine*, vol. 54, no. 3, pp. 176–182, 2019.

[11] J. Antero, H. Tanaka, Q. D. Larochelambert, M. Pohar-Perme, and J. F. Toussaint, "Female and male US Olympic athletes live 5 years longer than their general population counterparts: a study of 8124 former US Olympians," *British Journal of Sports Medicine*, vol. 55, no. 4, pp. 206–212, 2020.

[12] M. Jarraya, C. A. Blauwet, M. D. Crema et al., "Sports injuries at the Rio de Janeiro 2016 Summer Paralympic Games: use of diagnostic imaging services," *European Radiology*, vol. 31, no. 9, pp. 6768–6779, 2021.

[13] V. L. Lima, A. G. Fernandes, R. G. Viana, and D. Feder, "Eye care and ocular findings at the Olympic and Paralympic Games Rio 2016," *British Journal of Sports Medicine*, vol. 55, no. 11, pp. 596–600, 2020.

[14] W. Schobersberger, C. Blank, R. Budgett, A. Pipe, and M. C. Stuart, "Compliance with needle-use declarations at two Olympic Winter Games: Sochi (2014) and Pyeongchang (2018)," *British Journal of Sports Medicine*, vol. 54, no. 1, pp. 27–32, 2019.

[15] P. E. Adami, M. R. Squeo, F. M. Quattrini, F. M. D. Paolo, and A. Pelliccia, "Pre-participation health evaluation in adolescent athletes competing at Youth Olympic Games: proposal for a tailored protocol," *British Journal of Sports Medicine*, vol. 53, no. 17, pp. 1111–1116, 2018.

[16] J. S. Thornton, "Athlete autonomy, supportive interpersonal environments and clinicians duty of care; as leaders in sport and sports medicine, the onus is on us: the clinicians," *British Journal of Sports Medicine*, vol. 54, no. 2, 2019.

[17] A. M. Werling, E. Grünblatt, B. Oneda et al., "High-resolution chromosomal microarray analysis for copy-number variations in high-functioning autism reveals large aberration typical for intellectual disability," *Journal of Neural Transmission*, vol. 127, no. 1, pp. 81–94, 2020.

[18] A. Jkf, A. Dn, E. Mjga et al., "Synaptic and gene regulatory mechanisms in schizophrenia, autism, and 22q11.2 copy number variant–mediated risk for neuropsychiatric disorders," *Biological Psychiatry*, vol. 87, no. 2, pp. 150–163, 2020.

[19] F. Arhae and B. Emb, "Refining attention-deficit/hyperactivity disorder and autism spectrum disorder genetic loci by integrating summary data from genome-wide association, gene expression, and DNA methylation studies," *Biological Psychiatry*, vol. 88, no. 6, pp. 470–479, 2020.

[20] D. Kennedy, C. Haselgrove, S. Hodge, L. Honor, and J. Frazier, "Great paper! But can I repeat it? Re-executability assessment of the recent autism literature," *Biological Psychiatry*, vol. 87, no. 9, pp. S399–S400, 2020.

[21] D. Pfaff and H. Barbas, "Mechanisms for the approach/avoidance decision applied to autism," *Trends in Neurosciences*, vol. 42, no. 7, pp. 448–457, 2019.

[22] M. Fan and A. Sharma, "Design and implementation of construction cost prediction model based on SVM and LSSVM in Industries 4.0," *International Journal of Intelligent Computing and Cybernetics*, vol. 14, no. 2, pp. 145–157, 2021.

[23] R. Huang, S. Zhang, W. Zhang, and X. Yang, "Progress of zinc oxide-based nanocomposites in the textile industry," *IET Collaborative Intelligent Manufacturing*, vol. 3, no. 3, pp. 281–289, 2021.

[24] M. Bradha, N. Balakrishnan, A. Suvitha et al., "Experimental, computational analysis of butein and lanceoletin for natural dye-sensitized solar cells and stabilizing efficiency by IoT," *Environment, Development and Sustainability*, vol. 28, 2021.

[25] L. Xin, L. Jianqi, C. Jiayao, and Z. Fangchuan, "Degradation of benzene, toluene, and xylene with high gaseous hourly space velocity by double dielectric barrier discharge combined with Mn_3O_4/activated carbon fibers," *Journal of Physics D: Applied Physics*, vol. 55, no. 12, article 125206, 2022.