

# Effects of Sports Games on Rehabilitation Training, Athletic Ability and Social Ability of Children with Autism Spectrum Disorder

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**ABSTRACT.** *Objective: To analyze the effects of sports games on the rehabilitation training, sports ability and social ability of children with autism spectrum disorder. Methods: A total of 100 children with autism spectrum disorder admitted from June 2019 to July 2020 were selected and divided into two groups according to a random number table. 50 cases in the control group were treated with conventional rehabilitation, and 50 cases in the study group were treated with sports games. Compare the training effect, athletic ability and social ability of the two groups. Results: The exercise performance score of the study group was higher than that of the control group ( $P<0.01$ ); the language, perception, social ability and health behaviors of the study group were lower than the control group ( $P<0.01$ ). Conclusion: The clinical application of sports games to children with ASD (autistic spectrum disorder) can improve the children's exercise ability and improve their social skills. The clinical application effect is significant.*

**KEYWORDS:** *Sports games, Autism spectrum disorder, Training effect, Athletic ability, Social ability*

## 1. Introduction

Autism Spectrum Disorder (ASD) is a common clinical neurological development disorder disease, which has the characteristics of communication disorder, social disorder, and narrow interests<sup>[1]</sup>. Due to cranial nerve damage, children with ASD may have different degrees of movement disorders, which can be manifested as abnormal motor execution and fine motor, abnormal motor development, and poor motor coordination<sup>[2]</sup>. Once suffering from autism spectrum disorder disease, if effective intervention is not given as soon as possible, it will affect the daily life of the child<sup>[3-4]</sup>. This study analyzed the clinical data of 100 children with ASD selected from June 2019 to July 2020. The report is as follows:

## **2. Materials and Methods**

### **2.1 General Information**

The clinical data of 100 children with autism spectrum disorder admitted from June 2019 to July 2020 were selected and divided into two groups according to the random number table. There were 50 cases in the control group, including 26 males and 24 females, aged 3-9 years old, with an average age of  $(5.57\pm 2.34)$  years, a course of 12-24 months, and an average course of  $(8.52\pm 3.53)$  months; 50 cases in the study group, 27 males Cases, 23 females, age 4-10 years, average age  $(6.85\pm 2.46)$  years, course of illness 24-36 months, average course of illness  $(10.53\pm 4.55)$  months. Comparing the general information of the two groups, the difference was not statistically significant ( $P>0.05$ ).

### **2.2 Methods**

The control group was given routine clinical examinations and symptomatic treatment, and combined with the condition of the disease to adopt conventional rehabilitation treatment. The research group uses sports games without a dedicated sports game room. They are mainly carried out in the school's large activity room, small activity room and corridor. The activity room needs to be covered with soft foam cushions; the materials for sports games are balance beam, balance touchpad, Trampoline, balance trail, co-operating bicycle, table tennis, bowling, skipping rope, basketball, Shiatsu board, etc.; sports games time is 9-10 a.m. daily, and the game location and time can be determined according to the time situation; understand the basics of children Ability. If the child is unable to stand alone or on tiptoes, he can jump up and down, but cannot jump forward, backward, left, and right. It means that his upper and lower limbs are not strong enough. Therefore, simple and single sports games such as jumping or climbing are required. Group sports games: According to the children's functional recovery, the group is mainly composed of 2-3 people. During the sports games, a normal child can be selected, one year older than the patient, and the children can be promoted and assisted to develop games, and sports games are no longer simple and single, and need to combine two or more sports games, such as jumping and climbing.

### **2.3 Observation Indicators and Evaluation**

Use the self-made athletic ability questionnaire to evaluate the athletic ability of the two groups. Full score of 100 points, severe obstacles: less than 50 points; significant obstacles: 50-84 points; moderate obstacles: 85-95 points; mild obstacles: 96-99 points; according to the self-made social ability assessment form to evaluate the two groups of social skills, including language, perception, social ability and healthy behaviors, etc., the lower the score, the better the social skills <sup>[5-6]</sup>.

## 2.4 Statistical Analysis of Research Data

Using SPSS22.0 software, mean and standard deviation “ $\bar{x} \pm s$ ” table measurement data, t row inter-group and intra-group comparison; percentage (%) table count data,  $\chi^2$  row inter-group comparison,  $P < 0.01$  indicates that the difference is statistically significant.

## 3. Results

### 3.1 Exercise Ability of the Two Groups

The exercise ability score of the study group was higher than that of the control group ( $P < 0.01$ ), see Table 1.

Table 1 Comparison of Exercise Ability between the Two Groups ( $\bar{X} \pm s$ , Points)

Group	Number of cases (n)	Before treatment	After treatment	t	<sup>a</sup> P
Control group	50	35.73±3.18	52.25±4.11	22.4790	<0.01
Study group	50	36.15±3.24	68.58±4.46 <sup>a</sup>	41.5980	<0.01
t	-	0.6542	19.0390	-	
<sup>b</sup> P	-	>0.05	<0.01		

Note: comparison within the group, <sup>a</sup> $P < 0.01$ ; compared with the control group, <sup>b</sup> $P < 0.01$ .

### 3.2 Two Groups of Social Skills

The study group's social skills such as language, perception, social ability and healthy behavior are lower than the control group ( $P < 0.05$ ), see Table 2.

Table 2 Comparison of Social Ability between the Two Groups ( $\bar{X} \pm s$ , Points)

Group	n	Time	Language	Perception	Social Ability	Health Behavior
Control group	50	Before treatment	24.75±6.83	29.85±7.16	24.22±6.66	21.09±6.04
		after treatment	13.77±3.06 <sup>a</sup>	20.29±5.87 <sup>a</sup>	12.72±2.81 <sup>a</sup>	14.21±3.83 <sup>a</sup>
t	-	-	10.3740	7.3012	11.2495	6.8022
<sup>a</sup> P	-	-	<0.01	<0.01	<0.01	<0.01
Study group	50	Before treatment	25.09±7.32	29.22±7.84	23.44±5.29	20.27±6.11
		After	10.71±2.41 <sup>ab</sup>	15.11±4.13 <sup>ab</sup>	9.83±2.40 <sup>ab</sup>	10.70±2.21 <sup>ab</sup>

		treatment				
t	-	-	13.1943	11.2594	16.5670	10.4150
<sup>a</sup> P	-	-	<0.01	<0.01	<0.01	<0.01
t	-	-	5.5551	5.1033	5.5299	5.6129
<sup>b</sup> P	-	-	<0.01	<0.01	<0.01	<0.01

Note: comparison within the group, <sup>a</sup>P<0.01; compared with the control group, <sup>b</sup>P<0.01.

#### 4. Discussion

ASD (Autism Spectrum Disorder) is a common multiple psychiatric disorder in clinical practice. It mostly occurs in children. It is mainly characterized by abnormal language ability, abnormal communication ability, and fixed execution as the pathological characteristics. If timely and effective intervention is not given, it will affect the quality of daily life of children in some degree <sup>[7]</sup>. At present, sports intervention, music therapy, drug therapy and other methods are often used for clinical treatment of ASD. Although these methods have therapeutic effects, some studies have shown that sports games for children with ASD have significant effects and can improve children's exercise ability and social skills <sup>[8]</sup>. This study shows that the scores of exercise ability in the study group are higher than those of the control group, which is statistically significant; and the language, perception, social (9.83±2.40) points and health behaviors of the study group are lower than those of the control group, indicating that sports games are applied to ASD in children, it can improve their athletic ability and social ability, and the clinical application effect is remarkable. The reason for the analysis is: because sports games are a relatively special teaching method, they are widely used in kindergarten, elementary school and high school teaching because of their unique teaching function. Related studies apply sports games to children with autism spectrum disorders. Research shows that sports games can improve children's motor and social skills, and effectively improve their quality of life. In this study, clinical sports games were carried out for children with ASD. Three places in the school's large activity room, small activity room and corridor were selected. The activity room was covered with soft foam mats. The materials for sports games were balance beam, table tennis, bowling ball, skipping rope, etc. Play sports games every day; before starting sports games, understand the basic abilities of the children, take appropriate sports games for the specific physical conditions of the children, play group sports games according to the children's functional recovery, and drive and assist the children to develop games. Combine two or more sports games, such as jumping and climbing. Clinically, through the above series of sports game interventions, the motor and social skills of ASD children are improved, and their quality of life is improved.

In summary, the implementation of sports games for children with clinical ASD (autistic spectrum disorder) can improve the children's exercise ability and effectively improve their social skills, which is worthy of clinical promotion and use.

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