Influence of Family Sports Games on the Development of Early Communication Skills in Autistic Children

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With the development of society, the number of autistic children in China is increasing, which not only makes the family’s happiness very low, but also seriously affects the development of teenagers and society. Among the symptoms of autistic children, early childhood communication skills have received extensive attention. In traditional rehabilitation training, with a lack of parents’ participation, most of the training cannot arouse the interest of autistic children, so the treatment effect is not obvious. Based on this, this paper proposes the application of family sports games to improve the early communication ability of autistic children. This article aims to investigate the role of family sports games in promoting the development of early communication skills in autistic children. This paper uses the fuzzy comprehensive evaluation method to score the comprehensive ability of family sports games. The experimental results of this paper show that before the experiment, the comprehensive scores of children’s communication ability in the control group and the experimental group were 18.92 and 18, respectively, which were generally low, and there was no significant difference. This shows that the communication skills of the two groups of children before the experiment are relatively poor. After the test, the children’s comprehensive score of communication ability in the experimental group increased by 35.8 points, and the difference was significant, indicating that family sports games have a great impact on the development of children’s communication ability.

1. Introduction

The treatment and development of autistic children are unbalanced. Some autistic children will have normal language communication, but 70% of autistic children will have certain communication barriers. With families neglecting children, the incidence of autism has been increasing in recent years, and it is very difficult to cure autism completely. At present, there are various methods of rehabilitation training for autistic children, and some good results have been achieved. But some parents and teachers often ignore the improvement of communication ability of autistic children in rehabilitation training. In addition, the single form and boring content make autistic children have low will, with a lack of enthusiasm for rehabilitation training, and fail to achieve the desired expected rehabilitation effect, which makes the communication ability of autistic children worse and worse. Family sports games can organize sports activities in a planned way according to the physical and mental development characteristics of autistic children. Additionally, regular exercise can help autistic children develop their motor skills. Family sports games with various forms and rich contents can attract the attention of autistic children, which are an effective means of rehabilitation for autistic adolescents. Autistic children can improve their self-awareness of whole-body movement through scientifically structured physical games therapy. Motor skill training and body awareness research contribute to a variety of emotional regulation and brain function improvements.

With the rapid development of society, the advancement of science and technology, and the improvement of people’s living standards, the number of autism has increased year by
Autistic children are increasingly concerned by society and the government. Kaelan et al. found some evidence that bilingualism can improve impaired communication and cognitive skills in people with autism. However, diagnosing autism among bilinguals may be influenced by cultural biases, which may affect investigations of bilingualism and autism [1]. Crompton et al. found that effective messaging requires social communication skills. Since autism is clinically defined as a social communication disorder, a particular lack of information transfer among individuals with autism can be expected. Information transfer between individuals with autism may be more successful than between individuals with and without autism [2]. Moharreri et al. proposed that autism spectrum disorder (ASD) refers to a syndrome related to persistent impairments in communication skills, social interaction, etc. The early communication skills of autistic children will also be greatly affected [3]. Danilina and Gorbachevskaya analyzed the psychological data of a group of subjects with monogenic cognitive impairment and autism symptoms. Based on the results of the analysis, he found significant cognitive impairment, which persisted throughout the age range studied, severely affecting communication skills [4]. Prasetyoningsih et al. recorded data on children with autism spectrum disorder (ASD). Fifteen children were recruited using sampling techniques. These data were collected through in-depth observation and clinical intervention settings, which were then subjected to qualitative analysis. In terms of communication skills, participants typically employed simple indicative, assertive, and expressive (DEA) speech act and direct literal speech act strategies [5]. Scholars have found that the number of autistic children is increasing, which also brings many adverse effects, seriously affecting both the children’s communication ability and the development of society.

In the treatment of autistic children, family sports games have played a very important role. However, the current treatment methods in China are all based on rehabilitation institutions, lacking the integration of families. Cebanu et al. found that family sports games are very important for people with autism. He studied the cardiovascular system, central nervous system, respiratory system, and musculoskeletal system of children with autism, and performed functional status assessments to determine the degree of risk of adverse functional changes [6]. Corresponding author found that if every child with autism is provided with the same opportunity to play family sports games, even a very small patient may obtain the effect of significantly improving the ability of language communication [7]. The purpose of the Foster study was to summarize professional advice on how to conduct family physical games in children with autism, and to identify family-centered strategies that can be implemented by parents to provide guidance on the amount of physical activity children should get [8]. Joncheray et al. proposed that young people are the cornerstone of national development. But a large number of children suffer from autism, which seriously hinders the development of society. This has adverse effects on family life, society, and the country in the long run, but home sports games can be used to solve this problem [9]. Scholars have proposed the use of family sports games to improve symptoms of children with autism, such as communication skills and physical conditions. Through family sports games, children not only improve their language communication, but also change their physical functions. Scholars’ research on family sports games is consistent with the purpose of this study.

In order to study whether family sports games have an effect on the communication ability of autistic children, this paper firstly analyzes the harm of autism and the role of family sports games. Experiments were then conducted on children with autism using family sports games. The selected children with autism were divided into experimental group and control group. After the intervention of family sports games, the comprehensive scores of children’s communication ability in the control group and the experimental group were 21.6 points and 57.4 points. Compared with before the experiment, the comprehensive score of children’s communication ability in the control group did not change greatly, but the communication ability of the children in the experimental group was improved. Innovation of this paper is to study the effect of family sports games on the early communication ability of children with autism. Fuzzy comprehensive evaluation methodology is also used to evaluate the comprehensive effect of family sports games, and the result of high score of family sports games is obtained.

2. Comprehensive Evaluation of Family Sports Games

2.1. Application of Family Sports Games in Autistic Children

In family life, during the time of parent-child company, parents can consciously carry out some sports games with their children to promote the relationship between parents and children. The use of family sports games, as an intervention, is based on the physical and mental development of autistic children. The exercise method of family sports games can be used as a supplementary method to implement a special plan for rehabilitation education activities for autistic children. Family sports games are now frequently used in the education of different groups, especially in the treatment of special groups, which have been tried to a certain extent in various fields [10]. The types of family sports games are shown in Figure 1.

As shown in Figure 1, children are the most active and enthusiastic participants in family sports, so family sport is also a good means of educating children. In family sports games, their various natures will be revealed unconsciously, and their activities in front of their parents are even more unrestrained, with all kinds of emotions exposed. Parents can fully observe, understand, and master their characters, aspirations, and interests in order to carry out subtle guidance and education, so that they can grow physically and mentally [11].

Family sports game is an activity that combines sports and games. It not only contains game quality, but also has basic sports characteristics. At first, the researchers were skeptical of the conclusion. Later, researchers found that family sports games improved the physical condition and
mental development of autistic children, bringing various joys to autistic children, which improved their communication skills [12, 13].

2.2. Fuzzy Comprehensive Evaluation Method. Fuzzy comprehensive evaluation method is a comprehensive evaluation method based on fuzzy mathematics. This comprehensive evaluation method transforms qualitative evaluation into quantitative evaluation according to the membership degree theory of fuzzy mathematics, that is, to use fuzzy mathematics to make an overall evaluation of things or objects restricted by many factors. This paper uses the fuzzy comprehensive evaluation method to conduct a comprehensive evaluation of family sports games and judges whether it is conducive to the development of early communication skills of children with autism, so as to describe the full text.

Fuzzy comprehensive evaluation is usually divided into target layer and index layer. Through the fuzzy relationship matrix between the index layer and the evaluation set (namely, the membership degree matrix), the membership degree vector of the target layer to the evaluation set can be obtained.

2.2.1. Establishment of Evaluation Indicators for Family Sports Games in the Application of Autistic Children. Physicality (U₁): Family sports games are based on simple physical activities like walking, sprinting, jumping, and kicking a ball. Therefore, family sports games can help autistic children develop various physical skills, such as balance, strength, speed, and endurance.

Education (U₂): Family sports games are basic activities that are purposeful, organized, and planned. The games aim to help practitioners achieve certain goals through exercise, thereby helping autistic children to develop better overall physical and mental development. Family sports games are a mix of sports and recreational games that help children build a free, comfortable, and enjoyable environment. Providing proactive conversations with entertainment as the main goal can enhance the emotional experience of autistic children.

Regularity (U₃): Although family sports games have stricter rules, by formulating basic rules of social communication, autistic children can be restrained and can play under the premise of obeying the rules, so as to cultivate good habits. This can strengthen the trust and cooperation between peers and improve the adaptability of autistic children to the environment and society.

Competitiveness (U₄): The family sports game is different from the competitive sports which are generally carried out in the form of competition, but the competitive sports have unified strict rules and requirements. The intervention form of family sports games can improve the
possibility of recovery for autistic children, fully mobilize the enthusiasm of autistic children, improve their competitiveness, and adapt to the fiercely competitive social environment in the future.

2.2.2. Determination of the Weight of the Indicator System. In the above-established family sports game evaluation index system, the importance of each level and the evaluation factors and indicators below each evaluation level are different, so different weights should be used to describe this difference [14, 15]. The weight does not directly determine the ranking, but has a very large impact on the ranking. There are many methods to determine the weights, such as AHP, expert evaluation, Delphi, and factor analysis. These methods are scientific, reasonable, and well defined. Analytic hierarchy process, which is easy to grasp, is one of the most important methods. AHP is a decision analysis method commonly used to solve complex problems under multiple objectives. Assuming that the indicator \( U_1, U_2, U_3, \ldots, U_n \) of the same target layer is evaluated, the evaluation feedback of the pairwise importance comparison obtained is shown in Table 1.

As shown in Table 1, multi-objective decision-making is the theory and method of scientifically and rationally selecting multiple contradictory objectives and then making decisions. In the multi-objective decision-making, the factors to be compared and evaluated often contain ambiguity, and the priority and importance of them are difficult to quantify and compare accurately and scientifically. Therefore, people should not only pay attention to the role of quantitative factors, but also give full play to the subjective choice of decision-makers and effectively combine qualitative and quantitative research [16]. The constructed judgment matrix is

\[
P = (a_{ij})_{4x4} = \begin{bmatrix} 1 & 2 & 3 & 1 \\ 1/2 & 1 & 2 & 3 \\ 1/3 & 1 & 3 & 1/2 \\ 3 & 1/3 & 2 & 1 \end{bmatrix}.
\]  

After the judgment matrix is checked for consistency, if it does not meet the consistency conditions, the judgment matrix should be improved to achieve consistency. Similarly, a paired judgment matrix can be constructed for other indicators of the standard layer to perform hierarchical sorting [17]. For \( nU_1, U_2, U_3, \ldots, U_n \) items, under the criterion \( U \), the largest eigenvalue of the judgment matrix can be solved by calculating the sorting weight. The eigenvalues satisfy

\[
PW = \lambda_{max}W.
\]  

In Formula (2), \( W \) is the eigenvector corresponding to the largest eigenroot \( \lambda_{max} \), and its component is \( W_i = (i = 1, 2, \ldots, n) \). The weight of the corresponding element \( U_1, U_2, U_3, \ldots, U_n \) under the single ordering under the criterion is called the single ordering of this level [18].

The relative weights are then calculated. The eigenvector method is used repeatedly to calculate the relative weight of the same level indicator relative to the previous level indicator [19].

Then, completeness needs to be checked. Due to the different experience and knowledge structure of each expert, the judgment results given may also be different. Although the judgment matrix calculated above may not be completely consistent, AHP will only have a significant impact if it is sufficiently consistent, so it must be tested for consistency [20].

The characteristic root is the root of the characteristic equation. The characteristic root method is a general method for solving linear differential equations with constant coefficients in mathematics. According to the general principles of mathematics, in the case of \( N \) judgment matrices, the largest eigenroot is a single root, and there is a \( \lambda_{max} \geq n \). In simple terms, \( U \) has full consistency when \( \lambda_{max} = n \) and all remaining eigenvalues are 0. The consistency index is calculated as Formula (3) to ensure that the judgment matrix is consistent.

\[
CI = \frac{(\lambda_{max} - n)}{n - 1}.
\]  

When \( CI = 0 \), the judgment matrix is completely consistent. If not, it means that it is not completely consistent. \( RI \) is the average random consistency index of the judgment matrix and \( CR \) is the random consistency ratio of the judgment matrix, as shown in

\[
CR = \frac{CI}{RI}.
\]  

When \( CR = 0 \), the judgment matrix is completely random. It can be found that the judgment matrix is completely random and consistent when it is completely consistent.

The membership straight line is formed when the low value of membership is \( (a_1, u_1) \) and the coordinate of high membership is \( (a_2, u_2) \), as shown in

\[
\frac{a - a_1}{a_2 - a_1} = \frac{u - u_1}{u_2 - u_1}.
\]  

Among them, \( u \) is the membership degree of the indicator. On this basis, people can establish the membership degree of each index of family sports games. Membership generally refers to membership function. The total score for family sports play ability is shown in

\[
P_j = \sum_{i=1}^{n} u_iQ_i.
\]  

| Table 1: Pairwise importance comparison of relevant indicators. |
|-----------------|-------|-------|-------|-------|
| \( U_1 \)       | \( U_2 \) | \( U_3 \) | \( U_4 \) |
| \( U_1 \)       | 1     | 1/2   | 3     | 1     |
| \( U_2 \)       | 1     | 2     | 2     | 3     |
| \( U_3 \)       | 1/3   | 1     | 3     | 1/2   |
| \( U_4 \)       | 3     | 1/3   | 2     | 1     |


\( u_i \) represents the membership of the \( i \)-th indicator. \( Q_i \) represents the weight of the \( i \)-th indicator. The total score of the comprehensive evaluation of family sports games is the weighted average of the membership degrees of each index. The total score value is obtained as

\[
S_j = 100P_j, \tag{7}
\]

### 2.2.3. Comprehensive Evaluation of Family Sports Games.

Determinative index refers to the evaluation index that cannot be directly quantified but needs to be quantified by other means. For qualitative indicators, the method of comprehensive analysis and judgment can be used, which sets all qualitative indicators as multiple independent elements with specific properties. The principles of independence, objectivity, and fairness are followed, and multiple subjects are assessed using the assessor’s existing knowledge, experience, analysis, and judgment [21]. In order to form the analysis result of the whole evaluation object, each element is analyzed and judged.

A univariate analysis is then performed. Single-factor evaluation refers to the evaluation of factors obtained by multiplying the factor weights by the fuzzy evaluation matrix of each factor. Univariate analysis refers to the analysis of the degree of influence of a factor at different levels on an independent variable at a time point. According to the fuzzy matrix composite operation, the single-factor fuzzy evaluation of the corresponding factors is shown in

\[
B_i = W_{ij} \times R_{ij}. \tag{8}
\]

Finally, a comprehensive evaluation of the target layer is carried out. According to the single-factor evaluation method in the previous step, the evaluation results of each factor can be obtained in the benchmark layer. Similarly, the relative weight of each factor under the reference layer can be obtained by multiplying the fuzzy evaluation matrix formed by the evaluation structure of each factor. The goal level is the concretization of the purpose. It is also the desired future state that an organization strives to achieve. The comprehensive evaluation result of the target layer is shown in

\[
B = U_i \times B_i = (U_1 + U_2 + U_3 + \cdots + U_n) \times (B_1 + B_2 + B_3 + \cdots + B_n). \tag{9}
\]

The expert scoring method refers to a method in which the opinions of relevant experts are consulted anonymously, and then the expert opinions are counted, processed, analyzed, and summarized. Experts are invited to score, and the final evaluation result value \( B \) represents the final score of the family sports game. The higher the score is, the higher the family sports game ability is. If the score is lower, the comprehensive ability of family sports game is lower, as shown in Table 2.

It can be seen from Table 2 that the experts scored the comprehensive ability of family sports games to promote the development of early communication skills of autistic children. According to the formula, each index can be substituted into, and the comprehensive score of the promotion effect of family sports games on children’s early communication ability can be calculated, which is

\[
B = U_i \times B_i = (0.75 + 0.83 + 0.70 + 0.81) \times (0.78 + 0.74 + 0.80 + 0.82) = 9.6712. \tag{10}
\]

It can be seen from Formula (10) that the comprehensive score of family sports games in promoting children’s early communication ability was 9.6712, and the total score was 10 points. Therefore, the total score of the promotion effect of family sports games on children’s early communication ability is high, and the effect of family sports games is strong.

### 3. Results Analysis

Experiment on the Effect of Family Sports Games on Children: In the method part, this paper proves that the comprehensive score of family sports games was 9.6712, and family sports games can be reasonably applied to the promotion of children’s early communication skills. Therefore, this paper uses family sports games in the experimental part to conduct experiments on autistic children and then uses the methods in the method part to score them to prove that the family sports games proposed in this paper are effective. Five experts on the treatment of autistic children were invited to score.

In this paper, 40 suitable autistic children were randomly selected from the rehabilitation center, of which 12 were used as research objects, and 6 were used as experimental group, and the remaining 6 were used as control group. These children were 0–3 years old. The experimental group was given the intervention of family sports games, and the control group was given the training of rehabilitation institutions. The goal of this article is to improve the communication skills of autistic children by engaging them in family sports games.

In the first two weeks of the experiment, the experimental group and the control group were, respectively, diagnosed and evaluated with the “CARS” scale, and the children’s abilities in various aspects were scored by the fuzzy comprehensive evaluation method proposed in the method section. The results are shown in Tables 3 and 4.

As shown in Tables 3 and 4, this paper carried out expert scores for social relationships, emotional responses, anxiety responses, verbal communication, activity levels, and intellectual functioning. As can be seen from the table, there was no significant difference in the scores of the two groups in all aspects. However, in order to verify the reliability of the experiment, this paper still used the algorithm to test it. Since

| Table 2: Comprehensive evaluation of family sports games. |
|--------------------------------------------------------|
| Evaluation indicators | Expert rating |
|-----------------------|---------------|
| \( U_1 = 0.75 \) | \( B_1 = 0.78 \) |
| \( U_2 = 0.83 \) | \( B_2 = 0.85 \) |
| \( U_3 = 0.70 \) | \( B_3 = 0.87 \) |
| \( U_4 = 0.81 \) | \( B_4 = 0.86 \) |



this paper studies the development of children’s communication skills, only the column of language communication was judged:

Scores of the control group: \[ B = U_i \times B_i = (1.5 + 1.2 + 1.7) \times (1.5 + 1.2 + 1.6) = 18.92 \]

Scores of the experimental group: \[ B = U_i \times B_i = (1.1 + 1.3 + 1.6) \times (1.3 + 1.5 + 1.7) = 18 \]

It can be seen that the scores of the two groups in the level of language communication were 18.92 and 18, respectively, and there was no significant difference, indicating that the two groups had the same level before the test and the experiment can be carried out.

Effect of Family Sports Games on the Physical Development of Autistic Children: Some autistic children have basic motor skills, such as walking, running, and jumping. Due to incorrect walking and running posture and low jumping balance and coordination, it is important to teach them standardized movements to improve movement levels and the development of basic motor abilities. Figure 2 shows the physical development of the two groups of children after the test, as shown in Figure 2.

As shown in Figure 2, the development of the children in the control group has hardly changed, it has been between 15% and 25%, and their physical function was not very good. But the children in the experimental group grew better and better, rising to 56 percent by the end. Home sports games in all situations were almost always performed during physical movement. Physical activity can promote the development of motor skills in autistic children, such as muscle control, balance, and adjustment.

Different types of games can not only enhance physical function, but also enhance disease resistance and adaptability to the external environment. In short, family sports games can promote the physical development of autistic children, which is beneficial to the healthy development of the body.

Effect of Family Sports Games on the Social Development of Autistic Children: With the deepening of the experiment, the comparison data of the social abilities of the two groups of children after 6 months of the experiment are shown in Figure 3.

As shown in Figure 3, after the intervention of family sports games, the children in the experimental group were more and more willing to share with others, while there was no significant change in the control group. Growing from “natural person” to “social person” is the process of socialization of autistic children. Autistic children can benefit from physical play with clear goals and rules, because games allow them to communicate freely, communicate with each other, improve collaboration and teamwork, and learn to share positive experiences and joy. Not only can basic communication skills and methods be learned and perfected by following specific rules, but also the ability to adapt to society can be improved by following guidelines.

Effect of Family Sports Games on Emotional Development Ability: After 6 months of family sports game intervention education, the experimental group received the experimental analysis data, and SPSS19.0 data processing software was used to test the data before and after the experiment in the experimental group. The test results are shown in Figure 4.

As shown in Figure 4, emotional disturbance in autistic children is also a key issue in rehabilitation training. When the inner needs and desires of autistic children are not met, they are prone to crying, self-harm, and other negative emotions. Creating a relaxed, engaging, and cheerful game atmosphere in family sports games and supplementing the flexibility of sports activities are all conducive to the timely release of the negative emotions of autistic children and can make them happy. It is also necessary to actively guide and cultivate the rich emotional experience of autistic children, such as self-confidence, sense of achievement, and beauty. Long-term family sports games can also reduce the likelihood of adverse emotions such as anger and depression in children.

Effect of Family Sports Games on Language Communication Ability: After 6 months of experiment, this paper carried out the diagnosis and evaluation of the “CARS” scale
Figure 2: Physical development of autistic children in the two groups after 6 months. (a) Physical development of autistic children in the control group. (b) Physical development of autistic children in the experimental group.

Figure 3: Analysis of the number of sharing times between the two groups after the test. (a) Analysis of the number of sharing times in the control group. (b) Analysis of the number of sharing times in the experimental group.
Figure 4: Analysis of the number of occurrences of negative emotions after the experiment. (a) Results of the number of negative emotions in the control group. (b) Results of the number of negative emotions in the experimental group.
for the experimental group and the control group. The fuzzy comprehensive evaluation method proposed in the method section was used again to score the children’s abilities in all aspects. The results obtained after the test are shown in Tables 5 and 6.

As shown in Tables 5 and 6, family sports games first promoted the development of children’s communication skills. In the process of family sports games, the games of passing language were carried out according to the interests of autistic children, thereby improving communication skills, mastering language communication skills, thinking skills, and active problem-solving skills. Verbal communication skills were assessed:

Scores of the control group: \[ B = U_i \times B_i = (1.5 + 1.6 + 1.7) \times (1.8 + 1.5 + 1.2) = 21.6 \]

Scores of the experimental group: \[ B = U_i \times B_i = (2.1 + 3.0 + 1.9) \times (2.9 + 2.5 + 2.8) = 57.4 \]

Comparing the relevant data of the two groups before and after the experiment, the scores of the two groups were 21.6 and 57.4, respectively. This showed that the children in the experimental group had stronger communication skills, indicating that family sports games play a good role in promoting cognition and communication.

### 4. Conclusion

Social impairment is a prominent feature of autistic children. They cannot understand the meaning of socializing with others and cannot form interactions, which hinders children from integrating into the school and society. Improving the communication skills of autistic children is an early goal of early intervention and treatment for autistic children. The sooner the problem is detected, the more effective the intervention and treatment will be. Thus, the important time of treatment can be mastered and the best recovery effect can be achieved. In recent years, with the rise of family sports games, it has been found that family sports games can be well applied to the improvement of early communication skills of autistic children. This paper uses the fuzzy comprehensive evaluation method to evaluate the comprehensive ability of family sports games and finds that family sports games are suitable for improving the early communication ability of children with autism. In order to verify that family sports games can play a role, this paper compared two groups of autistic children in the experimental part. It was found that after the intervention of family sports games, the children improved not only their language and communication skills, but also their social skills and communicative skills. However, due to the limited knowledge, the research on autistic children is not very thorough, so there are still some omissions in many aspects. Hard work will be continued so that more relevant knowledge can be learned and it will be much better in the next study.

### Data Availability

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

### Conflicts of Interest

The authors declare no conflicts of interest.

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### References

[1] D. Kaelan, N. Katsos, and J. L. Gibson, “Relations between bilingualism and autistic-like traits in a general population sample of primary school children,” *Journal of Autism and Developmental Disorders*, vol. 49, no. 6, pp. 2509–2523, 2019.

[2] C. J. Crompton, D. Ropar, C. V. Evans-Williams, E. G. Flynn, and S. Fletcher-Watson, “Autistic peer-to-peer information
transfer is highly effective,” *Autism*, vol. 24, no. 7, pp. 1704–1712, 2020.

[3] F. Moharreri, E. Abdollahian, S. A. Hosseini, and M. Mirzadeh, “Comparative study on the effect of risperidone and its combination with naltrexone in pediatric patients with autistic spectrum disorders: a clinical trial study,” *International Journal of Pediatrics*, vol. 5, no. 12, pp. 6375–6382, 2017.

[4] K. K. Danilina and N. L. Gorbachevskaya, “Adaptive status, autistic symptoms and cognitive profile in patients with monogenic form of autism spectrum disorders—fragile X syndrome,” *Klinicheskaiia i speisial’naia psikholo gia*, vol. 9, no. 2, pp. 79–98, 2020.

[5] L. S. A. Prasetyoningsih, E. Suhartoyo, and M. F. Ubaidillah, “Exploring illocutionary acts employed by autistic children: the case of Indonesian children,” *XLinguae*, vol. 13, no. 2, pp. 245–257, 2020.

[6] S. I. Cebanu, R. D. Deleu, A. V. Tabirța, O. I. Tafuni, and G. E. Fripituleac, “Dynamics of the functional state of the body of young athletes practicing sports games,” *Hygiene and Sanitation*, vol. 100, no. 3, pp. 268–273, 2021.

[7] B. B. Corresponding, A. Hamzah, and M. Simbolon, “CASE report gender issue in masculine sports in Indonesia: a case study,” *Annals of Applied Sport Science*, vol. 9, no. 1, 2020.

[8] C. Foster, J. B. Moore, C. R. Singletary, and J. A. Shelton, “Physical activity and family-based obesity treatment: a review of expert recommendations on physical activity in youth,” *CLIN OBES*, vol. 8, no. 1, pp. 68–79, 2018.

[9] H. Joncheray, F. Burlot, and M. Julla-Marcy, “Is the game lost in advance? Being a high-performance coach and preserving family life,” *International Journal of Sports Science & Coaching*, vol. 14, no. 4, pp. 453–462, 2019.

[10] G. Crawford, D. Muriel, and S. Conway, “A feel for the game: exploring gaming ‘experience’ through the case of sports-themed video games,” *Convergence*, vol. 25, no. 5-6, pp. 937–952, 2019.

[11] C. Tanaka, S. Tanaka, S. Inoue et al., “Results from Japan’s 2018 report card on physical activity for children and youth,” *Journal of Physical Activity and Health*, vol. 15, no. S2, pp. S375–S376, 2018.

[12] P. Follent, “KDV golf and tennis academy,” *Architecture Australia*, vol. 107, no. 1, pp. 100–106, 2018.

[13] A. F. Urmi and B. Kc, “Obesity in children and adolescents and the factors responsible for it: a case study among children of some affluent families,” *Integrative Diabetes and Cardiovascular Diseases*, vol. 2, no. 1, pp. 56–66, 2018.

[14] A. Grzesik, “Connection between poker playing and problem gambling with sociodemographic factors and other gambling activities,” *Journal of Gambling Studies*, vol. 36, no. 2, pp. 421–433, 2020.

[15] R. Sabri, M. Hassan, and M. Asadullah, “Video gaming and its association with depression, anxiety and stress,” *İlköğretim Online*, vol. 19, no. 4, pp. 4869–4886, 2020.

[16] R. E. Rhodes, N. Nwachukwu, and A. Quinlan, “Family exergaming: correlates and preferences,” *Games for Health Journal*, vol. 7, no. 3, pp. 188–196, 2018.

[17] M. A. Oudat, “Sports culture among the students at the hashemite university,” *Sport Science*, vol. 13, no. 2, pp. 112–124, 2020.

[18] A. Kudret Saribay and Ş. Kirbaş, “Determination of nutrition knowledge of adolescents engaged in sports,” *Universal Journal of Educational Research*, vol. 7, no. 1, pp. 40–47, 2019.

[19] J. Saul and C. Norbury, “Does phonetic repertoire in minimally verbal autistic preschoolers predict the severity of later expressive language impairment,” *Autism*, vol. 24, no. 5, pp. 1217–1231, 2020.

[20] T. Liu, Y. Chen, D. Chen, C. Li, Y. Qiu, and J. Wang, “Altered electroencephalogram complexity in autistic children shown by the multiscale entropy approach,” *NeuroReport*, vol. 28, no. 3, pp. 169–173, 2017.

[21] J. Zhao, Z. Zhang, L. Wan, X. Li, and J. Kang, “Electroencephalogram feature extraction and classification of autistic children based on recurrence quantification analysis,” *Sheng wu yi xue gong cheng xue za zhi = Journal of biomedical engineering = Shengwu yixue gongchengxue zazhi*, vol. 38, no. 4, pp. 663–670, 2021.