

# The Color of Sports in Autism from the Perspective of Physical Education Teachers

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## ABSTRACT:

This study explores physical education teachers' perceptions and working experiences towards children with autism. The phenomenological qualitative research method was used in the study. Eleven physical education teachers participated in the study. Color metaphors and semi-structured interview question techniques were used to collect research data. In the findings obtained, being a teacher of children with autism was expressed with white color metaphors, being a teacher of children with autism was expressed with blue color metaphors, sports for children with autism was expressed with red color metaphors, families with children with autism were expressed with gray color metaphors, and in the analysis of semi-structured interviews, three main themes as field competence, social impact and development areas and eleven sub-themes related to them were formed. As a result, it was concluded that sports trainers have positive perceptions of children with ASD and that they have experiences that the sports pieces of training they implement have positive effects on these children.

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## INTRODUCTION

Sports environments offer great opportunities for individuals with autism spectrum disorder (ASD), as with all individuals with special needs, to develop a range of social dispositions and skills. For this reason, sports practices offer unique experiences in that they do not take place in a 'typical' classroom but require more socio-physical interaction (Graham, 2008). However, individuals with ASD have difficulty with activities that require motor skills, paying attention to tasks, social interaction, and maintaining interpersonal relationships (APA, 2013). Therefore, it becomes more difficult for individuals to understand and participate in activities that require cardiovascular endurance, muscle strength, balance, coordination, and general motor skills (Pan et al., 2010). Studies have reported that children with ASD are less likely to participate in sports, physical activity, and exercise (Ohrberg, 2013). Obrusnikova and Cavalier (2011) concluded in their study that children with ASD between the ages of 8 and 14 were more likely to participate in technology-based activities such as computer games and activities that did not involve social interaction, while physical activities involving physical movements or exercise were generally not preferred.

It has been reported that the participation of children with ASD in sports allows them to experience a fun activity with their peers and improves their interpersonal communication and interaction skills and motor development (Levante et al., 2023). For this reason, the low physical activity levels of children with ASD are closely related not only to their limitations but also to the environments, teaching methods, and especially instructor competencies organized according to their needs. The results of studies have reported that directing individuals with ASD to sports activities in line with their interests and abilities and participating in sports organizations contributes to developing their self-confidence, independence, and socialization (Karakaş & Yılmaz, 2023). To effectively support participation in sports and physical activity, organizations need to adopt various practices and resources to meet the needs of children with ASD. In his study, Sheaffer (2024) stated that partnerships with youth sports organizations will create inclusive sports environments that provide equal access to sports for children with ASD. It has also been reported that children with ASD have unique challenges in sports environments (Duquesne et al., 2022). For this reason, the opinions of sports trainers working with these indi-

viduals are essential. Studies have been conducted in the literature on teachers and families working in special education rehabilitation centers and school environments. In the interviews conducted, it is seen that they express difficulties such as lack of sports field, lack of materials, lack of cooperation between school, family, sports clubs, and families cannot have their children do sports activities due to financial impossibilities (Argan et al., 2021). In this study, on the other hand, the focus on how sports trainers perceive individuals with ASD by using both their experiences of the club environment and color metaphors through interviews makes it different from other studies. Colors have an essential place in the cultural life of societies. Emotions felt, or messages desired to be given have been conveyed to the individual or society through colors. Traditional meanings and emotions have been shaped with colors, and many expressions that cannot be expressed with words have been revealed with colors (İstanbulu, 2023). Yeşilbaş (2023) stated that "*colors are capable of contributing to many fields because they concern not only a single field but also multiple disciplines.*" In addition, it is also important to learn the instructors' feelings, thoughts, and experiences regarding club environments to produce solutions and compare them with school environments. The environments prepared for the needs of individuals with ASD and the measures to be taken ensure that children can successfully participate in sports and physical activity practices (McNamara et al., 2022). The study explored the perceptions and working experiences of physical education and sports teachers toward children with autism. For this purpose, answers were sought through the following color metaphors and semi-structured questions.

- Having autism is like.....Because.....,
- Being a teacher of children with autism is like..... Because....., Sports for a child with autism is like .....Because.....,
- Families with a child with autism are like ..... Because.....
- What do you think about the competencies of the area/facility where you do sports education practices in your institution?
- What are your thoughts about the social effects of sports training in individuals with autism?
- What are your thoughts about the effects of sports education on the development of individuals with autism?

## METHOD

### Research model

In the study, a phenomenological qualitative research design was used to examine the perceptions and experiences of physical education teachers toward children with autism. Phenomenological research designs enable researchers to uncover standard features of individuals' experiences with a phenomenon or concept and provide rich data to help them understand these experiences in detail (Creswell, 2014). Interviews with physical education teachers based on phenomenology allowed us to explore physical education teachers' experiences and perceptions of students with autism spectrum disorder.

### Participants

The participants' group consisted of 11 physical education teachers, five females and six males, who worked in an Autism Sports Club operating in Düzce province. The purposive sampling method was used in the study. The purposive sampling method enables in-depth research by selecting information-rich situations depending on the purpose of the study (Yıldırım & Şimşek, 2013). While forming the participants, volunteerism was taken as a basis, and it was accepted as a prerequisite that the teachers actively worked in the institution. Each participant was given pseudonyms K1 and K2 not to decipher the teachers' names in the research. Personal information of the participants: K1, male, 20 years old, and with 3 years of professional experience. K2, female, 23 years old, and with 2 years of professional experience. K3 is male, 40 years old, and has 16 years of professional experience. K4, female, 24 years old, with 1 year of professional experience. K5 is female, 26 years old, and has 5 years of professional experience. K6 is male, 23 years old, and has 2 years of professional experience. K7, male, 28 years old and with 1 year of professional experience. K8 is female, 25 years old, and has 3 years of professional experience. K9 is male, 25 years old, and has 3 years of professional experience. K10 is female, 27 years old, and has 5 years of professional experience. K11, male, 38 years old, and with 5 years of professional experience

### Data Collection Tools

Within the scope of the research, data were collected by preparing a personal information form prepared by the researchers, metaphor questions, and semi-structured interview questions in which teachers were asked to create color metaphors for the concept of physical education and sports for people with disabilities and write their justifications.

The researchers prepared the metaphor and semi-structured interview questions as a result of the literature review and under the purpose of the study. They were confirmed by applying to two academicians conducting qualitative research studies in the field and finalized by making the necessary arrangements.

#### Metaphor questions (on color)

Having autism is like....., Being a teacher of children with autism is like..... Because....., Sports for a child with autism is like ..... Because....., Families with a child with autism are like ..... Because.....

#### Semi-structured questions

What do you think about the competencies of the area/facility where you do sports education practices in your institution? What are your thoughts about the social effects of sports training in individuals with autism? What are your thoughts about the effects of sports education on the development of individuals with autism?

### Data Collection

The data were collected face-to-face with physical education teachers working in an autism sports club. After the study was explained to the teachers, metaphor questions were given in writing, and they were asked to fill them in. Then, individual interviews were conducted using a semi-structured interview technique. The interviews were conducted at the institution where the teachers work. The interviews with eleven teachers lasted between 35 minutes and 40 minutes. The interviews with the participants were recorded with a voice recorder after obtaining permission from the participants. The ethical permission for conducting this research was received from Muş Alparslan University Scientific Research and Publication Ethics Board (IRB: 141170., Date: 13.05.2024).

### Data Analysis

Among the qualitative data obtained from the interviews, both the semi-structured interviews were transferred from the voice recorder to the computer environment through transcription, and the metaphor data were analyzed using the content analysis method. Content analysis is a data analysis technique that aims to analyze the data more in-depth and to reach different themes and concepts than can be obtained through descriptive analysis (Krippendorff, 2013). The data, which were coded and mated separately by the researchers, were then finalized by determining standard codes and themes. An academician who is an expert in the field and familiar with qualitative studies also checked the appropriateness of the

codes and themes. Finally, the analysis process was completed, including creating and interpreting the findings. To ensure the internal reliability of the research, codes and themes were determined separately by two researchers and finalized with standard codes and themes. In addition, an independent academician outside the research, an expert in the field and qualitative research, checked the appropriateness of the codes and themes obtained after applying content analysis with a holistic approach. An inter-coder agreement was found to be 90%. Miles and Huberman (1994) reported that for a good study, the inter-coder agreement should be at least 80% according to the internal consistency formula (agreement / (agreement + disagreement)).

## RESULT

### Metaphor questions (on color)

The color metaphors of physical education teachers working in the autism sports club for the situation of "having autism" were examined. When we examine the statements of the teachers who tried to explain autism with the meaning they attributed to a color, it is seen that four teachers associate the condition of having autism with the color white, two teachers associate it with the color black, and two teachers associate it with the color yellow. The other three physical education teachers associated the condition of having autism with the colors purple, blue, and pink. When we look at the explanations of the teachers who said that having autism is like white, the teacher-coded K2 said, "*Actually it contains every color in it, but it cannot reflect it,*" and emphasized the feature of white objects reflecting all colors of light and children with autism. They have many characteristics, but struggle to express them effectively. Teachers coded K7 and K8; "*It expresses cleanliness and purity.*" It is thought that the teacher-coded K9 wanted to emphasize the innocence of children with autism with the expression "*they are pure and natural.*" When we look at the explanations of the teachers who said that having autism is like being black, teacher-coded K1 said, "*Life is always dark for them.*" teacher-coded K6 said, "*For them, this situation can remind them of darkness,*" and it is thought that they emphasized the fact that autism has no cure or there is no hope of complete recovery with the expression "*darkness.*" When we look at the explanations of the teachers who said that being with autism is like yellow. Teacher K3 coded "*expresses separation,*" and teacher K4 coded "*They are different from all of us and attract attention,*" they associated the different and remarkable fea-

tures of the color yellow with the differences between children with autism and the situation of attracting attention in society due to differences. The teacher with the code K5 associated the color purple with the condition of having autism and used the expression, "*It is richness, but you are lonely, no one understands you.*" The teacher who associated the color purple with richness emphasized that children with autism are rich in many characteristics, but they experience loneliness because they are not understood. The color metaphors of physical education teachers working in the autism sports club for the situation of "being a teacher of children with autism" were examined. When we examine the statements of the teachers who tried to explain the situation of being a teacher of children with autism with the meaning they attributed to a color, it is seen that five teachers associate it with the color blue. Three teachers associate it with the color green. The other three physical education teachers associated being teachers of children with autism with the colors red, white, and purple. When we look at the explanations of the physical education teachers who said that being a teacher of children with autism is like blue, teacher-coded K1 wanted to explain that children with autism are like the sea and working with them is good for their souls and calms them by emphasizing the calming aspect of blue and the sea by saying "*It calms people just like the sea.*" Teacher-coded K2 used the blue color to express the dreams they had for their students with autism by associating the blue color with the sky with the expression "*the teacher's dream is endless like the sky.*" Teacher-coded K9 expressed that the teacher illuminates the child's life like the sky by saying "*it illuminates the child-like when the sky is bright.*" Teachers coded K10 and K11 are thought to have established a relationship with the feeling of trust and peace, which they associate with the color blue with the expression "*symbolizes trust and peace,*" based on the emotions felt in the case of being a teacher of children with autism. When we look at the explanations of the physical education teachers who said that being a teacher of children with autism is like green, teacher-coded K4 wanted to emphasize that being a teacher of children with autism is a situation that gives confidence and comforts them when they benefit them with the expression "*It gives confidence and comforts.*" The teacher-coded K5 wanted to express that they felt honored by their work by saying, "*It honors you.*" The teacher-coded K7 wanted to express that their work gives them peace of mind by saying, "*It gives peace of mind.*" The physical education teacher-coded K8, who said that being a teacher of children with autism is like red, wanted to emphasize the

importance of working hard to achieve success in children with autism and acting decisively and determinedly in this sense by saying, *"It expresses perseverance and determination."* Teacher K3, who said it is like white, wanted to emphasize that they do what they do with pure emotions from the heart and that doing this job creates clean emotions in their hearts by saying, *"It opens a white page in our hearts."* Teacher K6, who said it is like purple, wanted to draw attention to the fact that it is an incredible feeling when children's development is beyond what they imagine with the expression *"pushes the limits of our imagination."* When we examine the statements of the teachers who tried to explain the situation of sports for children with autism with the meaning they attributed to a color, it is seen that four teachers associate it with the color red, and two teachers associate it with the colors pink and yellow. The other three physical education teachers associated sports for children with autism with the colors orange, white, and blue. When the explanations of the physical education teachers who said that sports for children with autism are like red are examined, K1 and K11 teachers stated that sports are exciting and energetic for children with autism, just like red with its warm color tone by saying, *"It symbolizes excitement and energy."* Teacher-coded K7 emphasized that sports are fun for children with autism by associating the color red with the state of fun with the expression *"it is fun."* Teacher-coded K9 claims *"It is mandatory to make progress in education"* associated the use of red color in rules and areas where attention is desired to be drawn with necessity and used it to explain the necessity of sports for the education of children with autism. When the explanations of the physical education teachers who said that sport is like pink for children with autism are examined, teacher-coded K2 said, *"It is something that can be needed at any time and adapts to everything"* and interpreted sport as something that makes progress by adapting to the development of children in every field in their lives. The teacher-coded K8 wanted to emphasize that sport gives children joy, improve their confidence, and relax them by saying, *"It expresses joy, confidence, and comfort."* When the explanations of the physical education teachers who said that sports were like yellow for children with autism are examined; teacher-coded K6 wanted to draw attention to the benefits of sports that reveal many hidden talents of children and reveal their dark features with the expression *"reminds the color of the sun coming out of darkness into light."* The teacher-coded K10 tried to explain that children with autism are happy while doing sports with the expression, *"It makes you feel happiness."* The

physical education teacher who said that sports for children with autism are orange drew attention to the excitement and vitality that children feel while doing sports with the warm color orange with the expression, *"They are excited and lively."* The physical education teacher who said white with the expression *"They empty their minds with sports"* wanted to emphasize that while doing sports, children replace the darkness in their minds with white and get away from the things that stress them while they are busy with other thoughts. The teacher who associated the color blue with the sports situation of children with autism wanted to draw attention to the fact that children are more peaceful while doing sports by associating the calming aspect of blue with peace with the expression *"It gives peace."*

When we examine the statements of the teachers who tried to explain the situation of families with children with autism with the meaning they attributed to a color, it is seen that four teachers associate this situation with the color gray. Two teachers associate this situation with the color black. The other five physical education teachers associated children with autism sports with the colors brown, purple, white, yellow, and red. When the explanations of the physical education teachers who said that families with children with autism are like gray are examined, with the expression *"They experience neither light nor darkness throughout their lives,"* the teacher-coded K1 wanted to express that even the slightest changes as a result of their children's education are significant for them. Still, it will not be a complete light for them unless completely recovered. With the expression *"they are indecisive and helpless,"* teachers coded K3 and K11 wanted to emphasize that they may feel indecisive and helpless in deciding how to receive education and what is best for their children. With the expression *"symbolizes humility and balance,"* teacher K8 emphasized that families are humble and tend to keep their lives in balance for their children. When the opinions of physical education teachers who said that families with children with autism are like black are analyzed, teacher-coded K5 stated that they struggle despite all the hopelessness to provide some improvement in their children in a situation that is completely incurable with the expression *"They look for the light in the darkness."* Teacher-coded K7 wanted to emphasize that families lose hope with the expression *"They are pessimistic."* The Teacher-coded K4, who said that families with children with autism are like brown, drew attention to the protective characteristics of families with the expression *"they protect and reassure."* Teacher K2, who said they are purple, emphasized that even a small

development can be hopeful for families with the expression, *"Whenever they fall into despair, a ray of sunlight is enough to enlighten them."* Teacher K6 (white) highlighted that families can be well-intentioned and transparent towards their children with the expression, *"They are pure and transparent."* Teacher K9 (yellow) emphasized their love for their children with the expression *"Their love for their children warms you like the sun,"* and teacher K10, who said they are like red, emphasized the importance of family with the expression *"Family is the most important thing."*

### Semi-structured questions

In the second part of the findings, the themes and coding of the answers given by the participants to the questions about the field/facility competencies for sports education practices in the institution where they work, the sociological effects of sports education on individuals with autism, and the effects of sports education on the development of individuals with autism are explained. The opinions of the participants on sports education practices in special education institutions were analyzed under two main themes on space and facility adequacy: Under the adequate sub-theme, it is seen that there is a large and suitable area, there is an appropriate area for branches, and environmental facilities are favorable; under the inadequate sub-theme, it is seen that there is insufficient space for different branches and insufficient for mobile students. Both sub-themes reflect teachers' views on the capacity of sports fields in their institutions. In the sub-theme of *Adequate Areas*, most teachers stated they have adequate areas in their institutions to provide sports education in various branches. Teachers coded K3, K4, K7, and K9 especially underlined that there are significant and suitable areas. Teachers coded K3 and K4 stated that their areas were ideal for branches such as basketball, table tennis, and court tennis. Teachers coded K7 and K9 stated that sports halls and school gardens are sufficient for sports education.

In addition, teacher K11 explained that they can provide education in various branches by giving examples of their schools' indoor sports hall and environmental facilities. In the *Inadequate Fields* sub-theme, teachers coded K1, K2, and K6 complained about the inadequacy of the field. Teacher K1 stated they could not provide education in branches such as swimming because of insufficient space. Teacher K2, on the other hand, noted that even though they had a large area, this was still insufficient because their students were very active. Teacher K6 stated that there was not enough space for branches such as

basketball, volleyball, and badminton and that the space was insufficient for some courses. Most teachers indicated they were satisfied with physically adequate spaces in their institutions. However, there may be difficulties in providing education in some branches. Especially for branches such as swimming, lack of space stands out as an essential problem. In addition, it was stated that larger spaces are required according to the mobility level of students, and the lack of sufficient space in some branches was emphasized as a factor that may affect the quality of education. These views clearly reveal two main themes regarding the adequacy of space: Where there is adequate space for sports education, usually supported by large gyms and outdoor areas, the lack of these areas in certain branches limits the scope of education. This again highlights the importance of providing appropriate facilities to increase the effectiveness and diversity of sports education.

When the opinions of physical education teachers working in an autism sports club about the social effects of sports education on individuals with autism are examined, it is seen that there are two sub-themes: behavioral forms, communication, and interaction. In the sub-theme of *"behavioral patterns,"* it is seen that sports education decreases obsessive and repetitive behaviors, decreases damaging behaviors, and decreases crying crises in individuals with autism; In the sub-theme of *"communication and interaction,"* it is seen that socialization and social relations, compliance with instructions and rules, and self-confidence are coded. In the sub-theme of behavioral patterns, the Teacher-coded K3 said, *"There is a significant decrease in obsessive and repetitive behaviors with sports training. In addition, crying crises and self-harming behaviors decrease."* Teacher-coded K4: *"I had a student who constantly repeated what was said. We overcame this obsession with sports training, and he showed a significant improvement."* Teacher-coded K5: *"The negative behaviors of children with autism disappeared after sports training. Harmful behaviors were replaced by positive behaviors."* Teacher-coded K6: *"My student's behaviors, such as crying and yelling, decreased after sports training. He is now much more harmonious and does not show aggression."* These statements include the positive effects of sports education on the behaviors of individuals with autism. In line with the opinions given by the teachers, it was stated that sports education reduced obsessive and repetitive behaviors in individuals with autism, crying crises and self-harming behaviors decreased, and positive behaviors replaced negative behaviors. In the communication and interaction sub-theme, the teacher-coded K8

said: *"With sports education, children gain self-confidence and improve their socialization skills. Sports strengthen the social relations of individuals with disabilities. It also helps children adapt to social environments. Basic behaviors such as eating habits develop through interaction within the group."* Teacher K9: *"With sports education, children learn to follow instructions, which enables them to behave in a disciplined manner and follow procedures in order. This improves their ability to do group activities and communication skills by making friends."* Teacher K7: *"Children receive societal approval through sports, and their social interactions increase. They start to get more attention thanks to their success."* K11: *"Sports education helps children gain skills in following instructions and controlling their bodies, which positively affects their social interactions."* In their statements, teachers stated the positive effects of sports education on the social communication and interaction skills of individuals with autism. Teachers emphasized that thanks to sports education, children gain self-confidence, their communication skills improve, and they can interact harmoniously with their social environment.

When the opinions of physical education teachers working in an autism sports club on the effects of sports education on the development of individuals with autism are examined, it is seen that six sub-themes are formed in the main theme of development areas. In the sub-theme of motor development, balance, coordination, strength, and power; in the sub-theme of cognitive development, attention and focus, problem-solving and strategy development, perceptual and directional concepts; in the sub-theme of self-care, daily living skills; in the sub-theme of language development, social communication, and speech, voice imitation; in the sub-theme of social-emotional development, peer interaction and group work, self-confidence; in the sub-theme of physical development, muscle and bone development, weight control and height growth were coded. In the sub-theme of Motor Development, the Teacher-coded K1 stated that table tennis improves coordination in children: *"In table tennis, they focus on the ball, this improves their reaction speed, and they also get stronger. Here, the child's stepping, strokes, and serving requires focusing on the ball. This training is very useful in developing coordination in children."* Teacher K2 also emphasized that children can learn which muscle groups they need to strengthen while doing sports and that coordination is improved in this process: *"Sports training helps children get stronger. Their arm muscles get stronger while playing basketball."* The teacher-coded K3 expressed the effect of sports training on improving balance: *"Since children with autism generally do not want to*

*do anything, they have deficiencies such as balance and coordination, we know that we overcome such deficiencies in the best way with sports education."* The teacher-coded K6 explained that children's ability to maintain balance in movements such as jumping improved with the work done to increase their leg strength: *"This student of mine is very young, he really likes jumping, his legs were a little weak, we strengthened his legs with strength training, now he can do sports involving jumping better."* Teacher K1 described how table tennis and other sports help to increase children's physical strength: *"Sports education is very useful in developing coordination in children; in swimming lessons, children get stronger, their strength increases."* The teachers' views show that sports education improves children's motor skills and supports the development of coordination, balance, and strength. In particular, they emphasize that table tennis improves children's fine motor skills, while sports such as basketball and swimming increase muscle strength and endurance. In the sub-theme of Cognitive Development, the Teacher-coded K1 stated that sports improve children's focusing skills as follows: *"Table tennis increases their focus on the small ball, the target. This increases children's attention span. Sports education is also very useful for children in focusing their attention."* The Teacher-coded K3 explained how they overcame children's attention deficits through sports training: *"Children can have a lot of attention deficit. We can see that they can overcome this with sports training. We can help them focus their attention in one direction and make eye contact."* Teacher K2 explained how she developed children's play strategies in sports such as basketball: *"A child with autism whom we prepare as a basketball player starts to analyze where to throw the ball and which strategy to follow in a short time."* Teacher K7 explained how activities such as cycling help children understand directional concepts: *"If we can teach cycling, the child can perceive the concepts of space and direction, balance and control simultaneously. This is a huge progress in terms of their cognitive development."* The teachers emphasized that sports education improves children's attention, focus, and problem-solving skills. In addition, the view that children progress in directional and perceptual concepts during games and sports emerges. In the sub-theme of Self-Care Skills, the Teacher-coded K3 expressed how sports training improved children's behavior at home and contributed to the development of self-care skills as follows: *"Thanks to sports training, children who can stay up late at night are both physically tired and their sleep patterns are regulated with physical activity. We also observed improvement in daily life skills such as toilet training."* The Teacher-coded K8

stated that children also experienced changes in daily skills such as eating habits: *"If a child has a problem with eating, he or she can gain the habit of eating with socialization."* Teachers' opinions indicate that sports education positively affects self-care skills. They emphasized that while physical activities regulate children's sleep patterns, they also help some students learn daily life skills such as eating and toilet training. In the sub-theme of Language Development, the teacher-coded K5 explained how her student improved social communication with sports training: *"While my student did not establish any social communication when he first arrived, he now participates in competitions and shares his success and failure. He started establishing bilateral communication by congratulating the other person and seeing his success."* Teacher K6 stated that sports training improves children's social interaction skills: *"When my student came, he did not like communicating with children at all. However, he now communicates with his friends by playing games and doing social activities with the group."* Teacher K11 gave an example related to language development: *"We also practice sound imitation in sports training. For example, when we make them throw tennis balls into the box, we make them imitate sounds. These children can do things they cannot do at the desk more easily in a sports environment."* The teachers stated that sports education enables children to develop social interaction skills and communicate with others. The increase in voice imitation and social interaction especially supports language development. In the Social-Emotional Development sub-dimension, the Teacher-coded K3 explained how a child who did not interact socially became more social with sports training: *"With sports training, we can focus children's attention in one direction and make eye contact with them."* Teacher K5 explained the increase in social interaction: *"Sports training greatly impacts the socialization of children with autism. They can communicate more easily with their friends in sports environments."* Teacher K7 emphasized the importance of self-confidence development: *"We provide training for the branches that students like and can achieve. This is because as children see that they can do it, they gain self-confidence and attend classes more willingly."* The Teacher-coded K8 stated that children gain self-confidence through sports as follows: *"Children gain self-confidence through sports. Socialization and group activities make them more confident."* In the teachers' opinions, it was emphasized that sports education supports children's socialization and harmonious group work. It was also stated that they gain self-confidence and develop social skills. In the physical development sub-dimension, the Teacher-coded K1 stated that

sports such as swimming and basketball effectively increase muscle strength: *"Activities such as basketball and swimming are beneficial for increasing children's muscle strength."* The Teacher-coded K4 reported how she observed changes in children's posture with physical activities: *"Physical activities especially strengthen the back and leg muscles. This led to significant improvements in students' posture."* Teacher K7 stated that height growth and weight control were achieved through sports: *"Children can increase their height with sports such as jumping activities and basketball. Also, movements such as running help solve weight problems."* Teacher K11 stated that both height growth and general physical development were supported with the balance board and other activities: *"We have made great progress in children's physical development with activities such as the balance board."* positive effects of sports education on physical development are clearly expressed in the opinions of the teachers. While students increase their muscle strength through activities such as jumping and running, weight problems are also regulated, and some students have increased in height thanks to sports such as basketball.

## DISCUSSION

### *Discussion on Color Metaphors*

When we examined the statements of the teachers who tried to explain autism with the meaning they attributed to color, we found that most four teachers associated the color white with being disabled. We stated that being autistic expresses cleanliness, purity, and naturalness, just like the color white, and that they prefer this color because it contains all colors. It can be said that they see their students as pure, natural, and clean and that they have many characteristics that make them open to discovery. The literature shows that white symbolizes simplicity, cleanliness, truthfulness, positivity, peace, innocence, and acceptance (Çalışkan et al., 2010). When the other teachers were examined, it was seen that after white, teachers associated the colors black, yellow, and purple with having autism the most. Teachers who associated having autism with the color black associated it with the fact that it reminds them of darkness and that life is always dark for them. Similarly, it is seen in the literature that the color black expresses melancholy, hopelessness, and disappointment (Uçar, 2004). In light of these statements, it can be said that some of the physical education teachers who participated in the study associate having autism with the feeling of hopelessness. The teachers who associated having autism with the color

yellow associated this condition with the fact that they attract attention to their differences. Yellow is the color of attractiveness (İçli & Çopur, 2008). At the same time, yellow is a vibrant, energetic, cheerful, and warm color (Uçar, 2004). In this respect, it is thought that physical education teachers may have emphasized that students with autism look different and remarkable due to their energetic and active structures. The teacher who preferred the color purple concerning having autism expressed this situation as you are rich, but you are lonely, and no one understands you. In some countries, the color purple is associated with reputation, vanity, and wealth (Madden et al., 2000). Purple is also the color of depression and confusion as it triggers anxiety (Madden et al., 2000). It is seen that the meaning of the color purple overlaps with the relationship established by the physical education teacher. In this direction, it can be said that the majority of the instructors perceive and express colors positively in their perceptions of ASD. When we examined the statements of the teachers who tried to explain the situation of being a teacher of children with autism with the meaning they attributed to color, we found that most five teachers associated it with the color blue. We stated that being a teacher of children with autism represents calmness, peace, trust, vastness and brightness like the blue color of the sky and the sea. In the literature, the meanings attributed to the color blue are that it represents calmness, coolness, freedom, trust, restfulness, and soothing (Madden et al., 2000). It is stated that the color blue creates a sense of peace, boundlessness, and calmness in people (Priluck Grossman & Wisenblit, 1999). Blue and navy blue tones are generally used to create an image of cleanliness and purity (Uçar, 2004). While defining being a teacher of students with autism, the physical education teachers used the expression of extremity, which supports the feeling of limitlessness and tried to reveal what it means for them to work with children with autism with the expressions of brightness, peace, and trust related to the meaning expressed by the color. In addition, after the color blue, teachers associated the color green with being a teacher of children with autism the most. The teachers who associated being a teacher of children with autism with the color green made explanations such as the color green gives confidence, relaxes, provides inner peace, and honors. Due to its prevalence in nature, green evokes freshness, coolness, harmony, growth, rebirth, peace, confidence, spring, and vitality (Baba Kaya & Beyleroğlu, 2021). In this sense, the meanings attributed to these colors by teachers using the green and blue color metaphor are close to each other,

and teachers perceive working with these students as calmness, peace, and trust. When we examine the statements of the teachers who tried to explain the meaning of sports for children with autism with the meaning they attributed to a color, we see that four teachers preferred the color red the most and made explanations such as sports for children with autism symbolizes excitement and energy, it is fun and it is mandatory to provide education. Red is the best color that our eyes perceive. It expresses power, excitement, passion, and danger (Uçar, 2004). At the same time, red has an energetic identity (Mehmeti, 2003). Physical education teachers tried to explain the meaning of sports for students with autism by presenting energy and excitement. At the same time, they tried to explain that it is compulsory for their education by using the aspect of red as a warning. After the color red, teachers associated pink and yellow colors with sports for children with autism. It was seen that the teachers who associated having autism with the color pink explained that this sport for them is something that gives joy and confidence, and they can adapt to everything. Pink means love, friendship, sincerity, and compassion. The color pink is also interpreted as a color that creates trust in people (Çalışkan & Kılıç, 2014). Two physical education teachers associated sports with yellow for children with autism by expressing it as a sun that gives happiness and rises out of darkness. They associate the development they observe in their students through sports with the sun rising out of the darkness, so they prefer the color yellow. When we examine the statements of the teachers who tried to explain their thoughts about families with children with autism with the meaning they attributed to a color, it is seen that four teachers preferred the color gray the most. It was seen that physical education teachers explained their associations between the color gray and families with children with autism with expressions such as *“they live neither light nor dark throughout their lives, they are indecisive and helpless,”* and the color gray symbolizes modesty and balance, just like families with children with autism. Grey is often associated with depression or anxiety (Carruthers et al., 2010). After gray, teachers associated the black color with families with children with autism the most. It was observed that the teachers who associated being in a family with a child with autism with the color black explained it with the expression, *“They are pessimistic; they look for the light in the darkness.”* In this sense, it can be said that teachers perceive the situation of families with children with autism as a negative and challenging process.

### Discussion of Semi-structured Interviews

As a result of the interviews, when the sub-theme of “Adequate” under the main theme of “Field Adequacy” for the question of what do you think about the adequacy of the area/facility where you do sports education practices in your institution was examined, it was seen that the physical field adequacy was emphasized. The participants stated that since there is no compulsory practice of providing sports education in special education institutions, most institutions do not have the opportunity and space for children with autism to receive sports education. In this sense, the opportunities and opportunities for children to do sports in sports clubs established on sports education are more adequate. Supporting the participants, Karakaş and Yılmaz (2023) stated in their study that physical education and sports practices are not included in the modules and regulations applied in special education institutions and that it is insufficient to carry out studies on physical education and sports practices in these institutions. In the sub-theme of “insufficiency,” it is seen that there are work areas and tools and equipment specific to sports branches, but there are insufficiencies and deficiencies in some branches. It has been stated that sports environments prepared in line with the interests, needs, and abilities of children with ASD contribute to the development of these children (Verret et al., 2022). For this reason, it can be said that it is important to create environments where they can work on more sports branches in sports club environments. When the opinions of physical education teachers working in the autism sports club about the social effects of sports education on individuals with autism are examined, it is seen that two sub-themes were formed: behavioral forms, communication, and interaction. In the sub-theme of “behavioral patterns,” the effects of sports education on decreased obsessive and repetitive behaviors, decreased damaging behavior, decreased crying crises, and improved inappropriate behaviors in individuals with autism were emphasized. In the sub-theme of “communication and interaction,” it was emphasized that positive developments in communication and interaction styles with both instructors and friends and families were effective in adaptation skills. For this reason, it can be said that sports training is effective in minimizing disorders with repetitive behaviors, interests, or activities (APA, 2013) limited to impairments in social communication, which is also included in the definition of ASD. Studies (Bahrami et al., 2016) support the findings obtained. When the opinions of physical education teachers working in the autism sports club on “the effects of sports education on the de-

velopment of individuals with autism” were examined, it was seen that six sub-themes were formed under the main theme of development areas and statements were used that sports education positively affected children with ASD. In the sub-theme of “motor development,” it was stated that sports training had positive effects on balance, strength, power, endurance, speed, coordination, reaction time, ability to perform synchronized and complicated movements, fine motor development, gross motor development, and sensory-motor development in children with autism. In the sub-theme of “Cognitive development,” it was stated that sports training positively affected the cognitive processes of children with autism in the form of decreased attention deficit, decreased perception problems, game reading-tactical development, increased focus, increased readiness level, understanding the concepts of place-direction, understanding the concepts of winning-losing, and being able to operate sports equipment. The sub-theme of “self-care” stated that sports education positively affected children with autism in the acquisition of sleep patterns, toileting alone, and eating-alone behaviors. The “language development” sub-theme stated that sports training positively affected increased verbal communication, learning by imitating words, and skills in autistic children. Again, in the sub-theme of “Social-emotional development,” they stated that they observed an increase in the levels of socialization, having a good time (having fun), interacting with friends, decreasing fears, reacting to their name, making eye contact, getting used to physical contact, fulfilling what is said, decreasing behavioral problems, sensory awareness, congratulating others, and gaining self-confidence in children with autism. The sub-theme of “physical development” emphasized that sports training has positive effects, such as increased physical parameters, muscle development, and improvement in physical limitations in children with autism. When examined in the studies, it was stated that sports practices positively affect the developmental areas of children with ASD (Iliadis & Apteslis, 2020). For this reason, it is important to develop the habit of sports as a way of life for children.

### Conclusion and Recommendations

When the results of the study participants’ perceptions of color metaphors related to ASD are examined, it is seen that they associate having ASD with the meaning of the color white and think that they have many features that are pure, natural, and open to discovery. They associated being a teacher of children with autism with the color blue and expressed the meaning of working with children

with autism with expressions of brightness, peace, and trust. While expressing sports for children with autism with the color red and explaining it with the aspect representing energy and excitement, they also explained that it is mandatory for their education by using the element of red for warning. Families with children with autism, on the other hand, associated it with the color gray and stated that it was a complicated process with distress and negative emotions. Three of the four questions about the color metaphor were positively perceived, which was related to themselves and the child with ASD. It was concluded that one of them expressed negative, which was related to the family. In the semi-structured interview results, it is understood that creating environments where they can work on more sports branches is essential. However, they have application areas and opportunities in sports club environments. Again, sports training is practical in the process of minimizing the deterioration in repetitive behavior patterns, interests, or activities limited to the decline in social communication seen in individuals with ASD. It was concluded that sports practices positively affect children's developmental areas.

In general, it was concluded that sports trainers have positive perceptions of children with ASD and that they have experiences that the sports training they implement has positive effects on these children. In this direction, it is recommended that sports trainers should be trained to help families in support systems, and policies should be produced to support, expand, and disseminate the opportunities of sports clubs serving children with ASD from public and private institutions and organizations.

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