Vol. XXV, Issue 1/ 2024

G Y M N A S I U M

Scientific Journal of Education, Sports, and Health

Original Article

Children with Disorders (ASD/ADHD) in Inclusive Physical Education from The Perspective of Church School Students

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DOI: 10.29081/gsjesh.2024.25.1.08

Keywords: *attitudes, social interaction, rules modifications, autism, inclusive physical educations.*

Abstract

The purpose of the research was to determine and compare the attitudes of church school students toward the inclusion of children with autism spectrum disorders and attention deficit hyperactivity disorder in physical education classes. A total of 147 able-bodied church school students (boys, n=66 with a mean age of 13.36±1.15 years; girls, n=81 with a mean age of 13.22±1.18 years) participated in the research. A questionnaire modelled after the CAIPE-R (Children's Attitude toward Inclusive Physical Education-Revised) was used as a research method. The results of the present study revealed significantly more positive attitudes towards the inclusion of peers with autism spectrum disorders in physical education classes than peers with attention deficit hyperactivity disorders. This result was confirmed in the girl's group's social relationships and the rules modifications in both genders of church school students.

1. Introduction

In the conditions of Slovak education, the inclusion of students with special educational needs is a constantly discussed topic. To support and develop inclusive education in Slovakia, various documents (e.g., the UN Convention on the Rights of Persons with Disabilities) have been created since 2010, culminating in the latest publication "The First Action Plan for the Implementation of the Strategy of Inclusive Approach in Education for the Years 2022-2024" (Ministry of Education, Science, Research and Sport of the Slovak Republic, 2022). This Plan is an important document by which the Government of the Slovak Republic fulfils one of its stated objectives, set out in the Programme Declaration for 2021-2024, in the field of

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inclusive education. The main philosophy of inclusive education in schools in the Slovak Republic is that education and training of pupils and students should be carried out based on equal opportunities and without discrimination in all areas. One of the areas that the Third Action Plan intends to develop by 2030 is the area of "Destigmatisation", the content of which is, among other things, to scientifically identify the success and limits of inclusion by revealing the attitudes of all interested parties acting in an inclusive environment (Ministry of Education, Science, Research and Sport of the Slovak Republic, 2022). Following this area of the document, we want to contribute by scientifically revealing the attitudes of able-bodied students toward the inclusion of peers with special educational needs. In our research, we therefore focused on the attitudes of able-bodied students towards the inclusion of students with autism spectrum disorders and attention deficit hyperactivity disorder in physical education classes.

Children with autism spectrum disorders (ASD) are characterized by impairments in social communication and stereotypical restrictive behaviour. Deviant communication is also typical of this neurodevelopmental disorder (AlSalehi & Alhifthy, 2020). In addition, up to 83 % of children with ASD have difficulties in age-appropriate motor skills (Ruggeri et al., 2020). Autism spectrum disorders range from a severe form, where children need very significant assistance in carrying out activities of daily living, to a milder degree of the disorder (Levy-Dayan et al., 2023), where they are so-called high-functioning autistic. It is children with less severe autism who are mainstreamed into schools alongside able-bodied students.

Attention deficit hyperactivity disorder (ADHD), one of the most prevalent psychiatric disorders in children, is characterized by developmentally inappropriate symptoms of inattention, impulsivity, and hyperactivity (Yin et al., 2022). Children with ADHD show difficulties in controlling their behaviour and attention, which affects their academic performance and social functioning (Nejati et al., 2023). Children with ADHD need increased activity and are restless and full of energy. Constantly suppressing increased activity in these children can harm them. They would show increased activity in a different situation, and it would harm the surroundings (Kostyrka-Allchorne et al., 2023). Therefore, it is important not to suppress activity in children with ADHD, but to let them "discharge" as much as possible. These children need to be given space for movement realization with free movement rules so that they can channel their energy in the desired direction (Jucovičová & Žáčková, 2015).

There is no doubt that regular physical activity plays a key role in improving and maintaining health (Ruegsegger & Booth, 2018) and physical fitness (Srivastav et al., 2023), not excluding children with health disorders (Bonanni et al., 2022). However, research suggests that although children with ASD enjoy participating in physical activities, many times them face barriers that prevent them from participating (Durmuş & Sarol, 2023). For children with ADHD, regular participation in physical and sporting activities is recommended as an important non-pharmacological therapeutic strategy to manage and alleviate ADHD symptoms, and to improve their executive functions (Zhu et al., 2023). School physical education

(PE) has an indispensable place in strengthening health, increasing physical fitness and physical performance, and creating a positive attitude towards lifelong physical activity in the children population (Slováková et al., 2022), including children with health disorders (Kurková & Nemček, 2016).

For children with disorders and disabilities, participation in inclusive physical education (IPE) is currently offered in mainstream schools. Students with ASD and students with ADHD, as equal participants in mainstream schools, are also included in PE lessons together with their able-bodied peers (Horná & Petőcz, 2015). Teachers in research studies often show positive attitudes toward the inclusion of students and ASD (Jury et al., 2021; Memisevic et al., 2021), but on the other hand, they declare a slightly negative attitude toward the inclusion of students with ADHD (Freedman, 2016). However, teachers perceive the inclusion of pupils with ASD and ADHD, research shows that they often face problems and complications in their inclusive lessons (Gómez-Marí et al., 2022), which in turn translates into the attitudes of the students themselves and the interactions between able-bodied and impaired students (Flavian & Uziely, 2022). Research by Berchiatti et al. (2022) showed that children with ADHD were rejected and disliked by their peers much more than expected. Also, the ADHD pupils themselves showed higher levels of emotional symptoms, behavioural problems, hyperactivity, and peer problems than able-bodied students. Other research declares that students with ASD are perceived positively by their classmates (Ayasrah et al., 2023), predominantly by girls (Barrios et al., 2023). Most of the research on the chosen topic that we have analysed has been concerned with the inclusion of children with ASD and ADHD only in the general education process and little in the context of PE teaching. Due to the lack of research addressing the inclusion of students with ASD and ADHD in PE classes, we decided to contribute our research to the body of knowledge in this area.

The purpose of the research was to determine and compare the attitudes of church school students toward the inclusion of children with autism spectrum disorders and attention deficit hyperactivity disorder in physical education classes.

2. Material and methods

The purpose of the research was to determine and compare the attitudes of church school students toward the inclusion of children with autism spectrum disorders and attention deficit hyperactivity disorder in physical education classes.

Participants. 147 students attending the Piarist School František Hanák in Prievidza (Slovakia) participated in the research. The students in the sixth to ninth grades were educated at the lower secondary primary school level. Participants were 66 boys (mean age 13.36±1.15 years) and 81 girls (mean age 13.22±1.18 years). The students completed the paper form of the questionnaire in the presence of the class teacher and the researcher who had instructed them beforehand. The legal representatives of the students signed an informed consent for their children to participate in the research.

Instrument and organization. We administered a questionnaire modelled after the standardized CAIPE-R (Children's Attitude toward Inclusive Physical

Education-Revised) questionnaire constructed by Block (1995). The author designed the questionnaire to apply to multiple impairments and disabilities, and this was the reason we chose to apply this questionnaire to our research. The modification of the questionnaire consisted only of the description of the pupil with the disorder, the statements in the questionnaire remained identical to the original version according to Block (1995). The questionnaire consisted of two main parts. In the first part, we offered a detailed description and behaviour of a student with autism spectrum disorders (Silvia, Richard), and in the second part of the questionnaire, we offered a detailed description of the behaviour of a student with attention deficit hyperactivity disorder (named Hana, Boris). The questionnaire was constructed separately for boys and girls since in this level of education they have PE lessons divided into boys and girls so they could better imagine in the lesson a peer with ASD and ADHD. For better imagination we offer a small part of the description of a student with ASD (Silvia) and part of the description of a student with ADHD (Boris): (1) *"Silvia is about your age and has difficulties in social and friendship relationships. Silvia has autism spectrum disorder. She does not like to talk to strangers and unknown people and often repeats certain actions (e.g., shaking hands) to calm herself down in this way. Occasionally, she has unexpected outbursts of anger and rage when something upsets her...."*; (2) *Boris is about your age and has difficulty maintaining attention and is hyperactive. Sometimes Boris seems not to hear when the teacher calls on him, often playing with his fingers and fidgeting on the spot. Boris likes sports, but when the teacher explains something, he jumps into his speech, does not listen properly to his instructions, runs around the gym, and thus disturbs other classmates, whom he sometimes even bumps into..."*. The description of the students with disorders was followed by statements that were summarized in two parts; (1) statements related to social interactions between students with disorders and able-bodied students in inclusive PE and (2) statements related to modifications of sports game rules for students with disorders. The social interactions domain contained 5 statements, such as *If Silvia was with me in PE, I would have fun with her, and I would be her friend*; and the rule modification domain also contained 5 statements, such as *It would be good if nobody could take the ball away from Boris after the pass* (Nemček, 2022, 2024). The attitudes, reflected in the degree of agreement with the statements, were rated by able-bodied church school students on a 4-point Likert scale as follows: score 1 - disagree, score 2 - rather disagree, score 3 - rather agree, score 4 - agree. We assessed the social interactions domain by summing the first five statements and the rules modifications domain by summing the next five statements. Higher scores indicated higher levels of agreement and at the same time more positive attitudes of able-bodied church school students towards inclusive PE.

Statistical analysis. To process and evaluate the data, we used the statistical program IBM SPSS version 27. The data were processed by mean score and standard deviation and statistically evaluated. The reliability (Cronbach's α) of the first part of the questionnaire, in which we asked able-bodied students about their attitudes toward the inclusion of children with autism spectrum disorders in mainstream PE classes, was $\alpha=0.75$ (acceptable degree of reliability). The reliability of the second

part of the questionnaire, in which we asked able-bodied students about their attitudes toward the inclusion of children with attention deficit hyperactivity disorder in PE classes, was α=0.80 (good degree of reliability) (George, & Mallery, 2016). The normality of the data distribution was verified by the Shapiro-Wilk test separately for the first [W(147)=0.984, p=0.081] and second [W(147)=0.991, p=0.495] part of the questionnaire. We found a normal distribution of the research data, so we further applied parametric tests for statistical evaluation. To compare differences in children's attitudes towards inclusion students with ASD and ADHD, we used a parametric paired sample t-test. The effect size was calculated by Cohen's d. The significance of differences was assessed at α≤0.05 (*) and α≤0.01 (**).

3. Results and discussions

The results of the research revealed that church school students declare significantly more positive social interactions towards students with ASD in inclusive PE classes compared to students with ADHD (t=4.04, p=0.00, d=0.33). The strength of the relationship (effect size) was small (Figure 1).

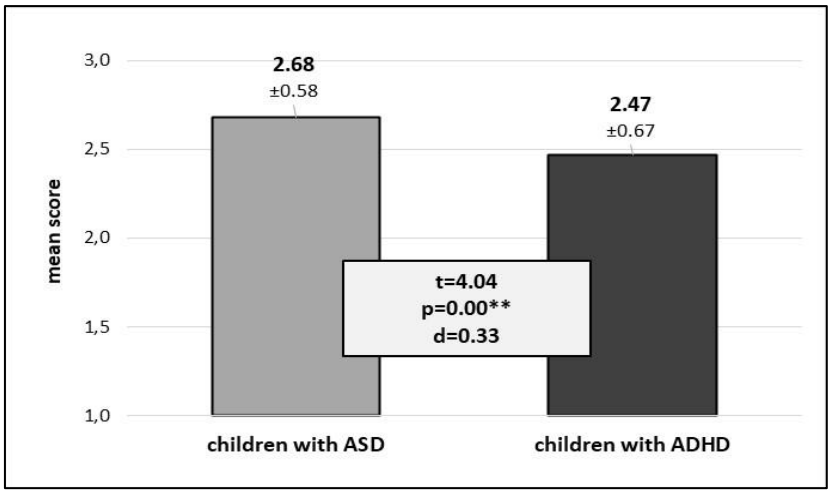

Figure 1. *Differences in social interactions towards IPE*

In the area of modifying rules in inclusive PE lessons, research has revealed that church school students again have a more positive perception of children with ASD compared to children with ADHD (t=11.40, p=0.00, d=0.94). The strength of the relationship (effect size) was large (Figure 2). In both areas of social interactions and attitudes towards modifying the rules of sports games in inclusive PE lessons, the church school students responded "rather agree" for the student with ASD and "rather disagree" for the student with ADHD. This result declares the mean scores (ASD - 2.68±0.58 and 2.86±0.54 points; ADHD - 2.47±0.67 and 2.30±0.61 points) (Figure 1, 2).

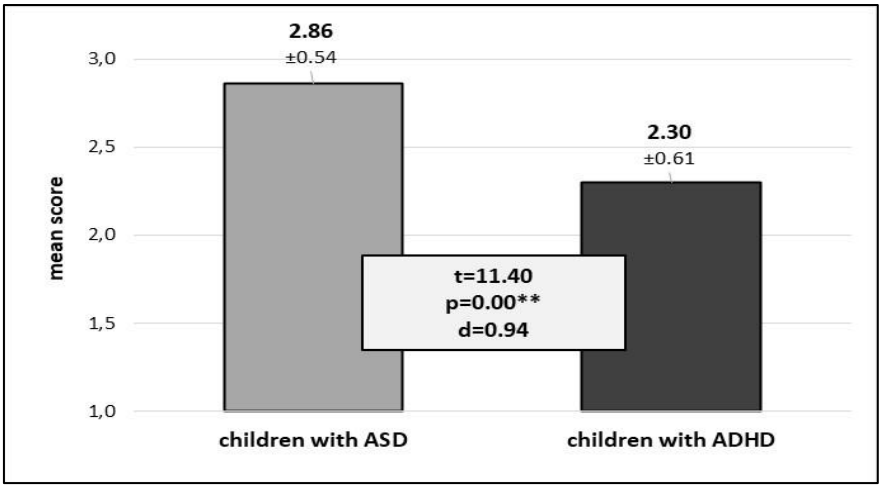

Figure 2. *Differences in rules modifications' attitudes towards IPE*

In a more detailed analysis of the attitudes of church school students towards the inclusion of students with ASD and ADHD in PE lessons, we found that significant differences occurred for boys only in modifications to the rules of sports games, and not in social interactions. Church schoolboys would behave the same way towards a peer with ASD as a peer with ADHD in inclusive PE lessons, but on the other hand, they were significantly more likely to agree with rules modifications for peers with ASD than for peers with ADHD (t=6.41, p=0.00, d=0.79). The strength of the effect was large (Figure 3).

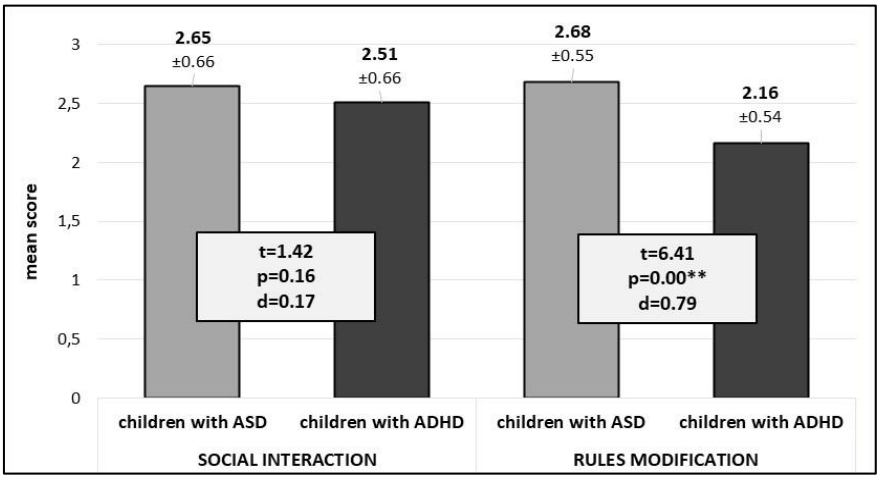

Figure 3. *Boys' attitudes towards inclusion of children with disorders in PE classes*

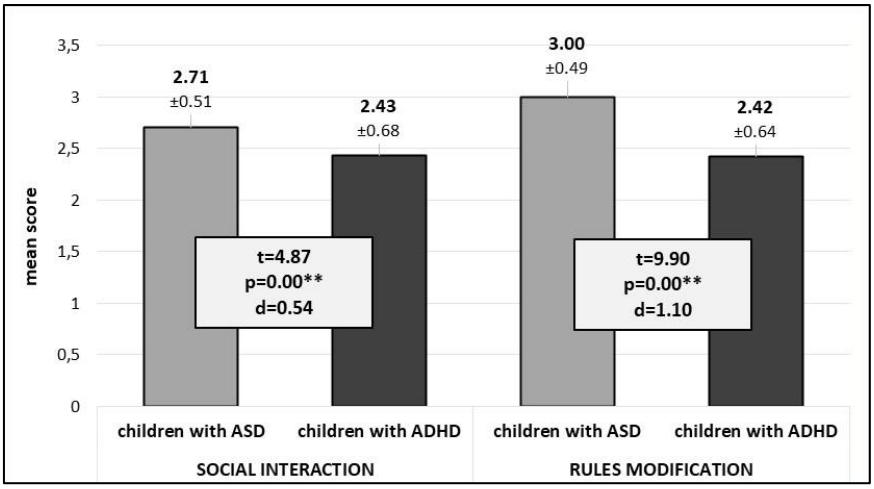

Figure 4. *Girls' attitudes towards inclusion of children with disorders in PE classes*

Different results were revealed when comparing girls' attitudes towards the inclusion of students with ASD and ADHD in PE lessons, where both in social relationships (t=4.87, p=0.00, d=0.54) and in modification of sports games rules (t=9.90, p=0.00, d=1.10) they perceived their classmates with ASD significantly more positively than their classmates with ADHD. The effect size of social interactions was medium and of rules modifications was large (Figure 4).

Discussions

The purpose of the present study was to determine and compare the attitudes of church school students toward the inclusion of children with ASD and ADHD in PE classes. We assessed students' attitudes towards inclusive PE classes at two levels, namely social interactions, and rules modifications. We found that church school students declared significantly more positive social interactions concerning students with ASD compared to students with ADHD. This result was shown only in the girls' group. Boys would treat a peer with ASD and ADHD in PE classes about the same, in a rather positive way. Research supports the theory that if people with and without disorders or disabilities have favourable contact with each other, then they will have positive attitudes towards each other, whereas unfavourable contact conditions or no contact tend to foster negative attitudes (Mavropoulou & Sideridis, 2014; Emmers et al, 2020). Church school students of the present research were familiar with the above disorders and their manifestations. 50% of the students had an experience outside the school environment with a person with ASD and 35.5% of them reported an experience with a student with ASD in their school. Experience with a person with ADHD outside of school was declared by 51% of the students, and 41.5% of the church school students had encountered such a student in their school. For those who did not have experience with a person with ASD or ADHD, we described the behaviours of children with ASD and ADHD in detail in the

questionnaire so that they could have a good idea of the behaviour of such a student in PE classes. Some studies have found the opposite. The authors' collective Olekšák et al. (2022) surveyed the attitudes of able-bodied students toward the inclusion of a student with a visual impairment in PE classes. The authors found that it was those students who had no prior personal experience with a visually impaired person who demonstrated significantly more positive attitudes towards a visually impaired pupil in PE classes in the areas of cooperation, willingness to help, socialization, and modification of the sports games rules than did students with experience. Although the pupils in our research tended to display rather positive attitudes towards pupils with ASD in PE lessons, there is also older research that has found that students with ASD in mainstream school experience a variety of problems including negative self-esteem, social difficulties, and anxiety related to lack of routine and excessive noise. Problems including bullying by classmates and misunderstanding by the teacher have also emerged (Humphrey & Lewis, 2008; Cook Ogden & Winstone, 2016).

The quality of mutual social interactions between able-bodied students and students with ASD significantly affects the level of involvement in physical activities of students with ASD in inclusive PE classes (Pan et al., 2011). Simply put, the more active able-bodied students are in social interactions with classmates with ASD, the more physically active students with ASD are in PE classes. It was found that if a specially structured physical activity program adapted for students with ASD is chosen in the inclusive PE classes, the more the social interactions and communication skills of these children will be positively affected, especially in social skills, communication, responsiveness, and frequency of expression (Zhao & Chen, 2018). Concerning the above research result, the boys, and girls of the present study, were positively inclined to modify the activity rules for students with ASD in the inclusive PE lessons, which may also have a positive impact on the development of the aforementioned attributes in students with ASD.

Further, our research found rather negative attitudes of both genders of able-bodied students toward the inclusion of students with ADHD in PE classes. These negative attitudes were demonstrated in both social interactions as well as in rule modification. Attitudes towards the inclusion of children with ADHD in PE classes were significantly more negative than the attitudes towards the inclusion of children with ASD. As we already mentioned in the theoretical analysis of the article, the attitudes of students are often influenced by the attitudes of the teachers themselves. One study also demonstrated that teachers in inclusive education were more accepting of the presence of a student with ASD than a student with an emotional behavioural disorder (Cassady, 2011). The same results were also reached by the older research of the authors Law et al. (2007). The authors investigated the students' attitudes towards the inclusion of a peer with ADHD in a similar way to ours, that after reading a detailed description of such a student, they should have imagined that he would be with them in the classroom. The attitude of most participants towards a peer with ADHD was predominantly negative. Research by Qi & Wang (2018) revealed that students with disabilities have almost no social interactions with able-bodied classmates in PE classes. Limitations were evident in conversations,

demonstrations, and assistance. The authors further found higher rates of social interactions among students with disabilities with each other than social interactions with their able-bodied peers. Children with ADHD demonstrate significant difficulties in their social interactions, which is most evident in PE classes in a variety of games (Reddy & Alperin, 2016). Despite these findings, able-bodied church school students in the present research refused to modify the rules of sports and motor games for students with ADHD in inclusive PE classes.

However, PE is an important teaching subject for children with ADHD and therefore these students must be fully participating and integrated in lessons. Physical activity and exercise are particularly beneficial for children with ADHD because they affect the already basic executive function deficits that characterize the disorder (Gapin & Etnier, 2010). However, authors have revealed that appropriately selected moderate to vigorous intensity physical activity, as part of a variety of exercise programs for children with ADHD, improves their motor skills, physical fitness, attention, and social behavior (Meßler et al., 2018; Arumugam & Parasher, 2019; Chan et al., 2022; Kleeren et al., 2023). Although the students in the present research reject rule modifications for students with ADHD in inclusive PE, on the other hand, it was revealed that teachers have a good understanding of ADHD and therefore use differentiated/modified instruction as an effective teaching practice to enhance the learning of this group of students, thus providing a safe classroom environment (Gibbs, 2023), which is particularly relevant to the environment in the sports hall.

The research results of the present study along with other research declare that participation in joint physical activities by able-bodied students and their peers with disorders can be highly beneficial in the development of reciprocal social interactions. Partially modifying the rules of games and activities in inclusive PE for students with disorders may also help to increase students' social interactions in inclusive settings. The role of the teacher, and his/her management of inclusive PE lessons, plays an important role in this matter. In future research, we would therefore like to focus on teachers' attitudes towards the inclusion of students with ASD and ADHD in PE lessons and to compare these attitudes between students and teachers.

5. Conclusions

Exploration of this research has proven a slightly positive attitude toward inclusion students with autism spectrum disorders and a slightly negative attitude toward inclusion students with attention deficit hyperactivity disorder in PE classes. Peers with ASD are perceived by able-bodied church school students significantly more positively than peers with ADHD in inclusive PE classes. This result was confirmed in the social relationships in the girl’s group and the rule modifications in both genders of able-bodied church school students.

Limits of the study

The biggest limitation of the research is the small size of the research sample and therefore we should be cautious when generalizing the results. Only students from one (church) school were surveyed, which we plan to expand to possibly

include students from state schools in the future. Another limitation of the research was that not all students had direct experience with a student with ASD or ADHD (approximately 40%), which could potentially bias the research results. However, the descriptions of the students with ASD and ADHD were detailed enough to allow students to form a correct picture of the students with the disorders.

Acknowledgment

The research was supported by the grant projects of the Ministry of Education, Research, Development and Youth of the Slovak Republic, KEGA No. 051UK-4/2022 (Inclusion in physical and sports education), VEGA No. 1/0694/24 (Physical and sports education as a means of the inclusion of pupils with autism spectrum disorders), and VEGA No. 1/0611/23 (The model of sport-specific classification for athletes with intellectual impairment in para-karate).

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