



A playful strategy in physical education classes to generate inclusion in first-year high school students diagnosed with Asperger syndrome

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- 1 Victor Jose Ramirez Heredia  <https://orcid.org/0009-0004-2411-9943>
Master's Degree in Physical Culture Pedagogy, Bolivarian University of Ecuador, Durán, Ecuador.
vramirezh@ube.edu.ec
- 2 Noel Batista Hernandez  <https://orcid.org/0000-0002-2975-2113>
Master's Degree in Physical Culture Pedagogy, Bolivarian University of Ecuador, Durán, Ecuador.
nbatistah@ube.edu.ec



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Resumen

Introducción: en problema central de esta investigación se deriva de un estudiante de la unidad educativa Carmen Mora Encalada, diagnosticado con síndrome de Asperger, un trastorno del espectro autista que afecta la comunicación y socialización, no obstante, a pesar de tener habilidades cognitivas y entusiasmo por aprender, el estudiante enfrenta dificultades en las interacciones sociales y en la adaptación a entornos ruidosos o impredecibles. **Objetivos:** es por ello que por medio de este importante trabajo se prevé responder la pregunta de investigación ¿La aplicación de una estrategia de juegos lúdicos, en la clase de educación física genera inclusión en estudiantes de primer año de bachillerato diagnosticado con síndrome de Asperger?, **Metodología:** se empleó un enfoque mixto con métodos teóricos, empíricos y dos instrumentos elementales tales como la entrevista y ficha de observación, los mismos que fueron aplicados al estudiante y a los docentes de Educación Física. **Resultados:** se encontró como resultado que los docentes perciben mejoras en la participación y el bienestar emocional de los estudiantes con síndrome de Asperger como fruto de la implementación de la estrategia de juegos lúdicos. **Conclusiones:** sin embargo persisten retos en términos de habilidades cognitivas, procedimentales y actitudinales que deben subsanarse. **Área de estudio general:** Educación. **Área de estudio específica:** Trastornos de Aprendizaje. **Tipo de estudio:** Artículos originales.

Abstract

Introduction: the central problem of this research derives from a student from the Carmen Mora Encalada educational unit, diagnosed with Asperger syndrome, an autism spectrum disorder that affects communication and socialization, however, despite having cognitive skills and enthusiasm to learn, the student faces difficulties in social interactions and in adapting to noisy or unpredictable environments. **Objectives:** This is why through this important work we plan to answer the research question: Does the application of a strategy of playful games in the physical education class generate inclusion in first-year high school students diagnosed with Asperger syndrome? **Methodology:** a mixed approach was used with theoretical and empirical methods and two elementary instruments such as the interview and observation sheet, which were applied to the student and the Physical Education teachers. **Results:** it was found that

teachers perceive improvements in the participation and emotional well-being of students with Asperger syndrome as a result of the implementation of the playful games strategy. **Conclusions:** However, challenges persist in terms of cognitive, procedural and attitudinal skills that must be corrected. **General area of study:** Education. **Specific area of study:** Learning Disorders. **Type of study:** Original articles.

Introduction

This research work is relevant because it aims to determine the impact on inclusion produced by the application of a strategy based on playful games in students with Asperger syndrome in physical education class. The initiative seeks to identify and develop methods that allow the full integration of these students in the educational system, focusing on their active and equitable participation in all areas of learning, with special attention to physical education, where specific challenges arise due to its particular characteristics.

Regarding the problem, various students diagnosed with Asperger's syndrome have been identified in teaching practice, who, despite their cognitive abilities and enthusiasm for learning, adaptation to noisy or unpredictable environments, together with difficulties in social interactions, significantly limits their inclusion in dynamic group activities, triggering unmotivated, isolated students with limited academic performance (Zayas et al., 2022).

The causes of this problem lie mainly in the specific characteristics of Asperger's syndrome, which directly affect social interaction and tolerance to physical environments, and in the lack of pedagogical strategies adapted to their specific needs in the field of physical education. This is why the application of recreational games designed to promote inclusion aims to mitigate these effects, allowing for better social integration and more active participation. Thus, this initiative seeks not only to improve the educational experience of these students, but also to contribute to inclusive knowledge and practices within the educational community, ensuring an equitable and accessible learning environment for all.

Students diagnosed with Asperger Syndrome: These will be operationally defined as first-year high school students who have been formally diagnosed by a qualified professional.

Playful games: Specified as planned physical activities that incorporate elements of play, fun, and cooperation, specifically designed to be inclusive and accessible to students with diverse needs, including those with Asperger syndrome. These activities will be described in detail, including objectives, rules, and necessary adaptations to ensure equal participation (Lerma & Montealegre, 2019).

Inclusion: It will be measured through specific indicators such as student participation in the proposed activities, the frequency of positive social interactions with peers and teachers during physical education classes, and the perception of belonging to the group. These indicators will be evaluated through direct observations, participation records, and surveys or interviews with students, parents, and teachers (Hernandez et al., 2021).

Impact on Inclusion: It will be assessed by comparing pre-intervention and post-intervention measures of the inclusion indicators mentioned above. In addition, the change in attitudes towards inclusion among students without Asperger's syndrome and teaching staff will be considered, as well as any improvement in the academic performance and emotional well-being of students with Asperger's syndrome, as established by the International University of La Rioja (UNIR, 2022).

Regarding the sociocultural context of the Carmen Mora de Encalada High School, it is strategically located on Jubones and Ochoa León Avenue, in the province of El Oro, Pasaje canton, and stands out as an emblematic teaching center in Zone 7 of Ecuador. With the educational institution code 07H00821, this school is characterized by its commitment to quality regular education, covering levels from Basic General Education to Baccalaureate (Ministry of Education, 2021). It has 73 highly qualified teachers, made up of 39 women and 34 men, which reflects a gender balance and a commitment to diversity in its staff. The dedication of its teaching staff is essential to offer an intercultural education, respecting and valuing the differences within its student community. With a total of 1,650 students, evenly divided between 880 girls and 770 boys, the school serves a wide and varied student population, providing high quality educational opportunities. In the first year of high school there are around 350 students, of whom 3 have a diagnosis of Asperger's.

Physical education stands out as an effective means of promoting educational inclusion, particularly for those with disabilities. This discipline not only contributes to improving motor and cognitive skills, but also encourages the development of essential values such as acceptance and respect for diversity (Lerma & Montealegre, 2019). Cooperative activities in physical education can reduce competitiveness and foster acceptance among students, creating an inclusive environment where everyone feels valued.

According to Duk & Murillo (2016) Physical education provides a space that naturally facilitates social interaction and communication, especially valuable for those with

disabilities. Therefore, inclusion is not just a legal mandate, but a social commitment that educators must adopt.

Asperger syndrome is an autism spectrum disorder that is primarily characterized by difficulty with social interaction and communication, as well as limited interests and repetitive behaviors. Although individuals with Asperger syndrome may have average or even above-average intellectual functioning, they often face significant challenges in understanding social conventions, which can lead to misunderstandings and difficulties in interpersonal relationships (Narváez & Lara, 2021).

Unlike other autism spectrum disorders, language and cognitive development often follow typical patterns, although they may exhibit particularities in language use, such as an advanced vocabulary at an early age or a formal or monotonous style of speaking. Individuals with Asperger syndrome may also show unusual sensitivity to sensory stimuli, such as loud sounds, bright lights, or specific clothing textures, which can significantly affect their daily well-being and ability to participate in ordinary activities (Hernandez & Grasst, 2021). Despite these challenges, many individuals with Asperger syndrome develop strategies to manage their difficulties and can succeed in a variety of areas, especially those that align with their specific interests.

However, the World Health Organization in 2018 reports that approximately one in 160 children is diagnosed with Asperger syndrome, a disorder that manifests itself primarily through challenges in social interaction and communication, restricted interests and repetitive behaviors, motor and emotional difficulties (Zayas et al., 2022). These characteristics represent barriers to inclusion in educational settings, especially in physical education classes, where social interaction and motor coordination are critical.

The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023), defines inclusive education as a process that seeks to identify and address the diversity of students' needs, minimizing exclusion and ensuring that all, especially the most vulnerable, receive an adequate education. This conception implies that each child is unique, with different abilities and learning requirements. Education systems must, therefore, develop programs that consider this diversity and provide effective responses to a wide range of educational needs, both in school settings and in other pedagogical contexts.

It is crucial to consider how to adapt educational systems to address student diversity. According to UNESCO (2023), inclusive education is conceptualized as a strategy that promotes the learning of all students, seeking to eliminate any form of exclusion and focusing on the human right to quality education:

- This approach is based on ensuring equal opportunities for all people.

- It involves transforming the obstacles that limit learning and promoting the participation of students, especially those most prone to exclusion and marginalization.
- Inclusion, in this sense, is defined as the ability of students to participate fully in the life and work of their communities, regardless of their specific needs.

Educational inclusion is closely related to educational equity, which is understood as the guarantee of equal educational opportunities both at the beginning and at the end of the educational process. According to Lalama(2018),maintains that inclusive education ensures that all students have the right to be part of the education system at various levels. This involves ensuring equal rights and responsibilities for all, regardless of differences such as religion, ethnicity, gender or social status, seeking to improve the quality of life of all people.

Play and playful practices are crucial elements in the learning process, especially in the early stages of educational development. Their importance extends beyond simple entertainment, providing a vital framework for children's cognitive, social and emotional growth (From a cognitive perspective, play fosters creativity, exploration, and critical thinking. When playing, children experiment, solve problems, make decisions, and learn to adapt to new situations. This type of experiential learning is essential, as it allows children to apply concepts and skills in a practical and meaningful context. Furthermore, play can be an effective tool for consolidating previously acquired knowledge, offering a fun and engaging way to practice and remember information.

Socially, playful practices are fundamental for the development of social and communication skills. During play, children learn to negotiate roles, follow rules, wait their turn, and share. These interactions are essential for the development of empathy, respect for others, and the ability to work as a team. Play also offers opportunities to manage conflicts and understand the perspective of others, which are crucial skills for life in society. Emotionally, play provides a safe space to express emotions and confront fears. Through playful activities, children can experiment with different roles and situations, which helps them understand and manage their own and others' emotions. Furthermore, play fosters self-esteem and self-confidence, as children often face challenges and achieve success in a playful environment (Alcalá & Madrigal, 2023).

Lopez et al.(2022)They highlight that play is fundamental to children's physical wellbeing, play activities often involve elements of physical activity which are essential for the development of motor skills, coordination and general health. In addition, outdoor play provides vital exposure to the natural world, encouraging an active and healthy lifestyle (Belmonte et al., 2023). The study is posed as a formulation: Does the application of a strategy of playful games in the physical education class generate inclusion in first-

year high school students diagnosed with Asperger's syndrome?, and as a general objective to determine the impact on inclusion produced by the application of a strategy based on playful games in students with Asperger's syndrome in the physical education class.

Methodology

This research adopts a mixed methodological approach, combining qualitative and quantitative elements to obtain a more complete understanding of how playful games are. The scope of this research is articulated around three fundamental dimensions: descriptive, exploratory and propositional. As an empirical level method, participant observation, bibliographic and documentary review were used, a measurement method that allowed the approach to the reality under investigation.

The theoretical level methods used were literature review, theoretical synthesis, hermeneutic analysis, model comparison, deduction, and induction, which were of great contribution to this research. The statistical method was used for the processing of quantitative data, using the SPSS statistical software. This program is widely used in social research for its ability to manage large data sets and perform complex statistical analyses efficiently and effectively. SPSS facilitated the performance of descriptive and inferential analyses, the generation of graphs, and the organization of data for reports and presentations.

In order to accurately assess the participation and behavior of students with Asperger syndrome in physical education classes, an observation form was implemented. This instrument was designed with specific categories that include social interaction, adaptation to activities, and other aspects crucial to the research. Semi-structured interviews were also implemented with Physical Education teachers to gather information on the implementation of recreational games aimed at inclusion. The interview helped to understand from the teacher's perspective how recreational activities are planned and executed and what their perception is about the effectiveness of these strategies in the inclusion of students with Asperger syndrome.

The Likert scale survey was used in this research to quantify students' perceptions about inclusion through recreational games in physical education.

Population and sample: The study population is made up of 36 first-year high school students A of Science and 4 Physical Education teachers. The type of sample selection is non-probabilistic; by convenience. 1 (one) student with Asperger's syndrome, 4 Physical Education teachers and the 35 first-year high school students. It should be noted that since it is a finite population, the entire group was taken as a sample.

Results

After conducting the interview with four physical education teachers of the educational unit Carmen Mora from Encalada, significant results were obtained. Firstly, teachers described their overall experience as positive, highlighting the effectiveness of playful games in actively engaging students and fostering an inclusive environment in the physical education classroom. The main benefits noted by teachers included increased participation of students with Asperger syndrome, as well as improved social interaction and self-esteem. However, they have also faced several challenges when implementing this strategy, including the need to adapt activities to meet the individual needs of students with Asperger syndrome and provide additional support to ensure their equal participation. Despite these challenges, teachers observed a positive response from students with Asperger syndrome towards playful games, indicating greater motivation and engagement compared to other, more traditional physical activities.

In addition, substantial improvements were noted in the participation and social interaction of students with Asperger syndrome during the implementation of this strategy, suggesting a positive impact on their emotional well-being and social development. In terms of cognitive development, progress was seen in logical-mathematical thinking and other cognitive skills of students with Asperger syndrome as a result of this strategy. To improve the effectiveness of the implementation of the playful games strategy, participants infer that it is essential to employ additional resources and specific supports, such as training in inclusion strategies and access to adapted materials.

Analysis of the observation sheet

After implementing the observation sheet for the student with Asperger syndrome, it is observed that the student presents key difficulties in several dimensions. In the cognitive dimension, there is evidence of difficulty in understanding and following instructions, as well as in solving problems effectively, a context that reveals a limitation in his ability to process information and maintain attention on the task during class.

Regarding the procedural dimension, it is observed that the student shows difficulties in actively participating in the proposed activities and adapting to the different tasks. In addition, he or she usually has problems correctly executing the required movements and following specific technical instructions, which translates into obstacles in his or her ability to carry out physical activities in a fluid and efficient manner.

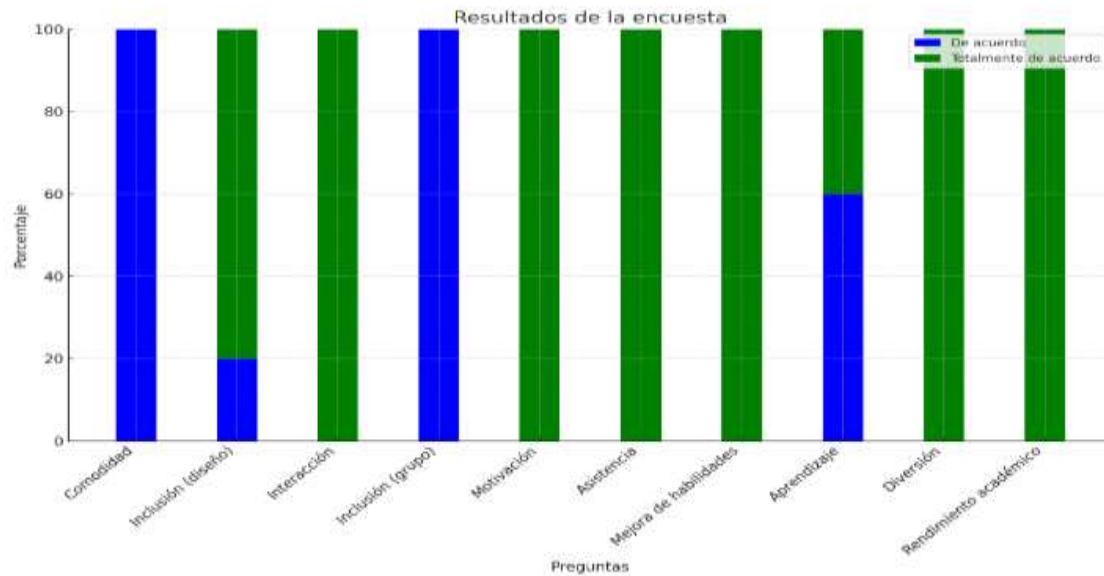
In the attitudinal dimension, it is evident that the student faces challenges in his social interaction, group collaboration and respect for the norms and rules established during class. He also shows a lack of persistence and effort in difficult activities, as well as difficulties in maintaining high self-esteem and self-motivation.

Quantitative analysis

Analysis of the survey applied to first year high school students

Figure1

General quantitative analysis



Note. Information obtained after the survey using SPSS

Dimension 1: Perception of the inclusive environment

1. I feel comfortable participating in physical education activities with all my classmates.

Analysis

It is observed that 100% of the respondents, a total of 35 students, indicated that they "Agreed" with feeling comfortable participating in these activities. This allows us to glimpse unanimously positive responses towards the inclusive environment that is attempted to be fostered in physical education classes.

2. I believe that physical education classes are designed to include all students, regardless of their special needs.

Analysis

It was later found that 100% of students believe that physical education classes are designed to include all students, regardless of their special needs. This allows us to infer that there is a high and positive recognition on the part of students in relation to the subject.

Dimension 2: Social interaction

3. Playful games in physical education help me interact more with other students who are not my usual friends.

Analysis

Regarding the present question, 100% of the students consider themselves to be in complete agreement that recreational games in physical education help them to interact more with other students who are not their usual friends.

4. I feel more included in the group when we all participate together in fun games.

Analysis

According to the data collected, it is observed that 100% of those surveyed, a total of 35 students, indicated that they "Agree" with feeling more included in the group when we all participate together in fun games.

Dimension 3: Participation and motivation

5. I am motivated to participate in fun games during physical education classes.

Analysis

However, it was also learned that 100% of students fully agree that they are more motivated to participate in recreational games during physical education classes.

6. Fun games make me want to go to physical education classes.

Analysis

Regarding the question about whether recreational games make them want to attend physical education classes, it was established that 100% of students leaned towards the option Totally agree, for the rest of the alternatives there was no response.

Dimension 4: Perceived benefits of recreational games

7. Playful games help improve my social skills.

Analysis

It is observed that 100% of the respondents, a total of 35 students, indicated that they were "Totally in agreement", a situation that is translated as favorable because a clear expectation about the subject is evident.

8. I think that fun games are a good way to learn and practice new physical skills.

Analysis

Regarding the question subject to analysis, it was found that 100% of students think that recreational games are a good way to learn and practice new physical skills.

9. Fun games make physical education more fun for everyone.

Analysis

According to the information about the subject and its entertainment options, it is observed that 100% of the respondents leaned towards the option "Totally agree", a situation that suggests that students feel comfortable in these classes.

10. I believe that playful games promote better understanding between students with and without Asperger syndrome.

Analysis

Ultimately, it was identified that playful games promote better understanding between students with and without Asperger syndrome, which is why 100% was obtained. Totally agree".

Discussion

Based on the results obtained from the interview, it is evident that teachers have a mostly positive perception of the effectiveness of the playful games strategy in the inclusion of students diagnosed with Asperger syndrome. Teachers highlight the increase in student participation, as well as significant improvements in their social interaction and self-esteem as key benefits of this strategy. However, they also recognize the challenges inherent in its implementation, such as the need to adapt activities and provide additional support to ensure equitable inclusion.

On the other hand, the results of the observation sheet highlight the key difficulties faced by students with Asperger syndrome in different cognitive, procedural and attitudinal areas during physical education classes. A notable difficulty was observed in understanding and following instructions, as well as in actively participating in the proposed activities and maintaining appropriate social interactions.

This is why the information collected gives rise to the existence of a discrepancy between the perception of teachers and the reality observed in students. Although teachers perceive improvements in the participation and emotional well-being of students with Asperger syndrome as a result of the implementation of the playful games strategy, challenges persist in terms of cognitive, procedural and attitudinal skills that must be analyzed. To close this fluctuation between perception and reality, it is essential to implement additional support and adaptation strategies in the physical education classroom from a scientific perspective. This could include ongoing training in inclusion strategies, interdisciplinary collaboration with special education specialists and the provision of adapted resources and materials based on previous research.

In addition, the importance of careful and flexible planning to accommodate the individual needs of each student with Asperger syndrome is highlighted, thus promoting their full participation and inclusion in physical education classes. It is essential to base these strategies on available scientific evidence and on research-supported pedagogical approaches, in order to ensure the effectiveness of interventions and maximize positive outcomes for students with Asperger syndrome in the field of physical education.

Conclusions

- In the final instances, it is argued that the application of strategies based on playful games for physical education classes has the potential to generate inclusion in students diagnosed with Asperger syndrome. That is why, through this important initiative, we seek to promote the equal participation of these students in all areas of learning, with the aim of overcoming the limitations they face in physical education due to their conditions.
- It was also found that the lack of pedagogical strategies adapted to the needs of students with Asperger syndrome in the field of physical education significantly limits their inclusion in dynamic group activities. This situation promotes demotivation, isolation and limited academic performance. It is therefore essential to develop methods that allow the full integration of these students in the educational system and to design inclusive and accessible recreational games to encourage their participation.
- The impact on inclusion of students with Asperger syndrome is assessed using indicators such as participation in the proposed activities, positive social interactions with peers and teachers, and the perception of belonging to the group. The comparison of pre-intervention and post-intervention measures allows determining the effect of the strategy based on playful games in improving inclusion. In addition, the change in attitudes towards inclusion among students without Asperger syndrome and teaching staff is considered, as well as

improvements in academic performance and emotional well-being of students with Asperger syndrome.

Conflict of interest

The authors of this article declare that there is no conflict of interest in relation to the content and results presented herein. All procedures and analyses performed were carried out objectively and without external influences that could bias the results obtained.

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