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## *Body expression as an alternative for psychomotor development in autistic students*

*La expresión corporal como alternativa para el desarrollo psicomotriz, en estudiantes autistas*

*Expressão corporal como alternativa para o desenvolvimento psicomotor em estudantes autistas*

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### **ABSTRACT**

Autism is a disorder that affects language development, communication fluency, expression through emotions, and the quality of body movement in young children. Using body expression in Physical Education classes offered a series of resources to develop nonverbal communication and group relationships. The result presented was aimed at socializing



actions of a body expression program as an alternative for psychomotor development in seven and nine year old students with autism spectrum disorder, from the Inter-American Bilingual Educational Unit in the city of Cuenca, Ecuador. The research responded to a mixed approach and scientific methods such as observation, survey, interview, and document analysis were used for its intervention, which facilitated the acquisition of information about the participation and inclusive attention of their psychomotor development in Physical Education classes, where it was revealed that body expression can be an effective form of intervention to promote a more complete and balanced development.

**Keywords:** autism, physical education, body expression, educational inclusion

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### *RESUMEN*

El autismo es un trastorno que afecta el desarrollo del lenguaje, la fluidez de la comunicación, la expresión a través de emociones y la calidad del movimiento corporal en niños y niñas de temprana edad, y utilizar la expresión corporal en las clases de Educación Física ofreció una serie de recursos para desarrollar la comunicación no verbal y las relaciones grupales. El resultado que se presenta tuvo como objetivo socializar acciones de un programa de expresión corporal como alternativa para el desarrollo psicomotriz en estudiantes de siete y nueve años con trastorno del espectro autista, de la Unidad Educativa Bilingüe Interamericana de la ciudad de Cuenca, en Ecuador. La investigación respondió a un enfoque mixto y para su intervención se utilizaron métodos científicos como la observación, la encuesta, la entrevista y el análisis de documentos, lo que facilitó adquirir información acerca de la participación y la atención inclusiva de su desarrollo psicomotriz en las clases de Educación Física, donde quedó revelado que la expresión corporal puede ser una forma efectiva de intervención para promover un desarrollo más completo y equilibrado.

**Palabras clave:** autismo, educación física, expresión corporal, inclusión educativa

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## RESUMO

O autismo é um transtorno que afeta o desenvolvimento da linguagem, a fluência da comunicação, a expressão por meio das emoções e a qualidade do movimento corporal em meninos e meninas desde cedo, e o uso da expressão corporal nas aulas de Educação Física ofereceu uma série de recursos para desenvolver não -comunicação verbal e relações grupais. O objetivo do resultado apresentado foi socializar ações de um programa de expressão corporal como alternativa para o desenvolvimento psicomotor em alunos de sete e nove anos com transtorno do espectro do autismo, da Unidade Educacional Bilingue Interamericana da cidade de Cuenca, no Equador. A investigação respondeu a uma abordagem mista e para a sua intervenção foram utilizados métodos científicos como observação, inquérito, entrevista e análise documental, o que facilitou a aquisição de informação sobre a participação e atenção inclusiva ao seu desenvolvimento psicomotor nas aulas de Educação Física, onde. revelou-se que a expressão corporal pode ser uma forma eficaz de intervenção para promover um desenvolvimento mais completo e equilibrado.

**Palavras-chave:** autismo, educação física, expressão corporal, inclusão educacional

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## INTRODUCTION

Inclusive education is conceived as a process that aims to recognize and respond to the diversity of needs that students present, so that their learning is effective and exclusion is minimized inside and outside educational institutions (Quintero Ayala, 2020)

In the fourth of the Sustainable Development Goals (SDG) of the 2030 Agenda, reference is made to inclusive, equitable and quality education for all educational levels (UNESCO, 2016). In this sense, it is considered that inclusive educational work must be developed in all stages of education.

Autism spectrum disorder (ASD) is a neurobiological disorder that significantly affects the social, communicative and behavioral development of those who suffer from it; those



affected may experience difficulties in psychomotor development, including motor skills, coordination, balance and spatial perception.

According to the Global Prevalence Of Autism (2022), autism, also known as ASD, constitutes a group of diverse conditions related to brain development. These can be detected in early childhood, but often, autism is not diagnosed until much later.

Approximately one in every 100 children has autism. Their capacities and needs vary and can evolve over time. Although some people with autism can live independently, there are others with severe disabilities who need constant attention and support throughout their lives.

In this regard, evidence-based psychosocial interventions can improve social aptitudes, communication and have a positive impact on the well-being and quality of life of people with autism and their caregivers. Care for people with autism must be accompanied by measures at the community and social level to achieve greater accessibility, inclusiveness and support.

André et al. (2020) state that the prevalence of ASD has increased in recent years, making it clear that the available figures have direct implications for the current and future needs for early intervention services and programs and the increase in research into its possible causes.

The identification of medical entities or triggering factors allows for better developmental control, adequate genetic counseling, prevention of avoidable risk factors and, in the future, if based on molecular findings, a possible specific therapeutic approach ( André et al., 2020 ; Arberas, 2022 ).

People with ASD frequently show deficiencies in their social behavior, evidenced by a lack of orientation toward social stimuli, visual treatment, empathy, and problems for initiating interactions, to name a few. Bermúdez et al. (2020) propose implementing techniques to promote generalization on how to train behavioral variations, incorporating stimuli from



the natural environment into training, choosing target behaviors that are likely to make contact with the natural environment.

Many times, the mistake made by people who work with ASD is not carrying out a prior psychomotor assessment, and working in an improvised manner, without taking into account the needs of each individual, a problem that can be addressed with a good diagnosis and the performance of physical activities.

Since 2022, in Ecuador, the development of motor skills and abilities in Physical Education (PE) classes are of great importance to meet each of the curriculum objectives, for this reason methodological and pedagogical strategies must be correctly applied to guarantee the active, flexible and playful participation of each of the students with special educational needs.

Therefore, Caro (2023) highlights that these students, when performing PE exercises, are withdrawn, do not carry out the activities in the time established by the area teacher, do not maintain balance when performing them, do not have coordination to jog, jump and run, are slower when throwing and catching a ball or other type of object, find it difficult to move from one side to the other quickly, tend to constantly fall and make clumsy or uncoordinated movements.

Carriedo et al. (2020) state that movement and communication manifestations are key elements for the comprehensive development of students and body expression is responsible for their union to educate in different aspects. Body expression collaborates with the learning and development of students, these movements allow them to develop their full potential, strengthen their cognitive abilities and promote healthier growth, both physically and mentally.

The need to link art with education and health aims to analyze the benefits of body expression used as a tool in alternative therapy, to improve the quality of life of children with autism (Irala, 2019). Hence, through the practice of activities and games related to body expression, students are able to develop a cooperative attitude. This leads to having more



inclusive education in the centers, especially in the integration in the ordinary classroom, and a more appropriate education is established for their characteristics.

Posso and Barba (2023) highlight the importance of body expression as a methodology to foster creativity and the inclusion of students with specific educational needs. What has been assessed so far allows to reflect that body expression can be an effective form of intervention to address these difficulties and promote a more complete and balanced development.

Based on the responsibility assumed by the authors to be part of a research project that is tempered to educational inclusion from the benefits that PE provides in the educational units of the city of Cuenca, Ecuador, the first steps are taken in the analysis of the claims presented by the group of teachers, where the main problems are solved from the field of PE, which reinforces the motivation for the research that is carried out.

The study presented aims to socialize actions of a body expression program as an alternative for psychomotor development in seven and nine year old students with ASD, from the Inter-American Bilingual Educational Unit of the city of Cuenca, Ecuador.

### ***MATERIALS AND METHODS***

In a descriptive study, the data collected are analyzed and presented objectively, without making inferences or generalizations beyond the limits of the study.

The population was taken from the students of the basic general education sublevel of the Bilingüe Interamericana Educational Unit, in the city of Cuenca, Ecuador, and as a sample, two students with ASD, considered as a case study and diagnosed by the DECE of the institution.

The research had a mixed approach by non-experimental design of descriptive scope, since it analyzed the opinions and behaviors of students with ASD. Emphasis was placed on their psychomotor development, by involving in the collection of data from techniques such as observation, surveys and document analysis.



As theoretical methods, the analysis-synthesis enriched the research, which allowed determining the causes and effects and then summarizing the most important elements and obtaining general conclusions that included students with ASD; while the inductive-deductive made it easier to establish the object of study and systematize specific knowledge and information regarding the topic addressed.

For the assessment of motor coordination, the KTK test battery was used, designed by Kiphart and Schilling in 1970 and revised in 1974, in order to identify movement and coordination problems in students aged between five and 14. Its standardization and reliability process was carried out in Germany with a sample of 1228 subjects using the test-retest, over a period of four weeks.

For its application, a minimum area of 4 x 5 m was used. There were four tests: balance with backward displacement, jumps on one leg (unipodal), lateral jumps and lateral displacement; in each of them, the demonstration was made and previous attempts were allowed.

The backwards walking balance test consisted of maintaining balance while walking backwards on three wooden slats with the following dimensions: 3 m long, 3 cm high and a width varying between 3 cm, 4.5 cm and 6 cm, respectively. The slats are fitted on wooden pedestals 12 cm wide, 5 cm long and 2 cm high, giving a final elevation of the apparatus as a whole of 5 cm. These pedestals are installed every 50 cm.

Once the test is complete, the student walks backwards on each bar three times. If he or she falls, the steps are recorded (one step equals one point) and the student moves on to the next attempt. Passing the bar without falling is worth eight points. If the route is completed with fewer steps, eight points should also be awarded. The maneuver is then repeated on the 4.5 cm bar and the 3 cm bar.

The single-leg jump consists of jumping over 12 rectangular foam rubber boards placed gradually on top of each other. The dimensions of the material are 50 cm long by 20 cm wide





and 5 cm thick. The jump is performed with the jumping leg in support and the other leg bent backwards, from a line located 1.50 m from the obstacle.

The first jump is to approach the obstacle, the second is to overcome it and then two more jumps must be made with one leg, to indicate that the jump is controlled and that balance is maintained. By age group, the heights (stacked foam rubber boards) are: 6-7 years, 5 cm (one foam board); 7-8 years, 15 cm (three foam rubber boards); 9-10 years, 25 cm (five foam rubber boards); and 11-14 years, 35 cm (seven foam rubber boards). If the first attempt fails, the test begins at a height of 0 cm. If, on the other hand, the test passes, the test begins at the recommended initial height.

The lateral jump test consists of jumping sideways from one side to the other on a platform measuring 60 x 50 x 0.8 cm thick, with a wooden slat measuring 60 x 4 x 2 cm high placed in the centre and the total number of jumps that can be performed is assessed over the course of 15 seconds. Two attempts are given for this.

Finally, in the lateral displacement test, two boards measuring 25 x 25 x 1.5 cm thick are used, with four rubber door stops at the corners, which will give the device a height of 3.7 cm from the ground. The evaluation consists of moving the boards laterally as many times as possible in 20 seconds.

A demonstration of the exercise is done and the person gets on a board, leaves the other one on their left side, then takes the board on their left with both hands and puts it on their right, then gets on top of this and again takes the board on the left, and so on repeatedly (this can be done on the right or left side, as preferred by those being evaluated).

The participant performs four to five movements before the test. The test is repeated twice on the same path. The instructor stands in front, two meters away, to describe the movements that are not lateral.

It is worth mentioning that each of the tests has its own scale and is established according to the age of the person being evaluated. The score that each student receives is shown



numerically with its corresponding qualitative judgment (Very Weak, Weak, Average, Good and Very Good); this result is called the motor quotient (MC).

The Very Weak and Weak scores reflect a deficiency in the assessed motor development; the Average score indicates a normal or expected performance; and the Good and Very Good scores are considered above normal and show great motor development. After obtaining the CM for each test, these are added together to obtain a global motor quotient (CMG), which determines the level of development of motor coordination.

For the assessment of motor coordination, the KTK test battery was used, with the application of a formalized observation and for this, the evaluative indicators taken into account in Table 1.

*Table 1. Evaluative indicators for motor coordination in students with ASD*

Very good	Well	Average	Weak	Very Weak
10	8	6	4	2

It should be noted that due to the characteristics of the research and for its quantitative judgment, numerical values were assigned. The indicators taken into account and their results are displayed in this same order.

*Table 2. Indicators to assess motor coordination in students with ASD*

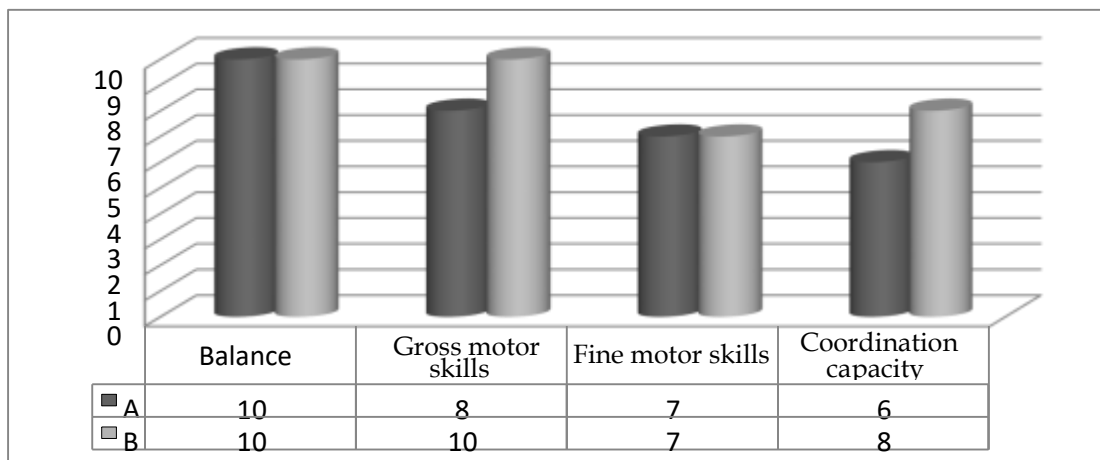
Balance	Gross motor skills	Fine motor skills	Coordination capacity
Static	Gross motor coordination	Tweezers games	Tracking the pace
Dynamic	Motor imitation Adaptive obstacle course Hopping on one leg Manual dexterity with object Hand-eye coordination	Throwing and aiming	Obstacle course



## RESULTS

The documentary review showed that the curriculum that accommodates the sampled students presented deficiencies in the specific learning needs, lacked challenges to develop practices for both their physical condition and their social insertion, and a lack of organization was noted, which demonstrated that its content did not facilitate attention to the progress and rewards of the students involved.

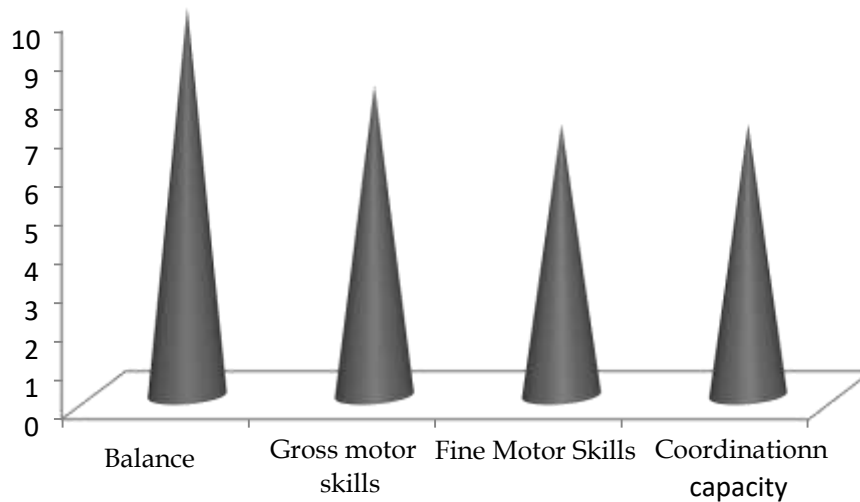
When paying attention to the movements of the two students with ASD, they twisted their clothes, clapped their hands extremely frequently, jumped insistently, walked on tiptoe and kept their neck flexed and extended. Therefore, it was necessary to assess motor coordination and the results are shown in Fig. 1.



*Fig 1. Results by indicators at the diagnostic stage.*

As can be seen, the main incidences were found in the fine motor skills indicator, which, although affected in the good and average range, the motor coordination of these students allowed for an approach from body expression as an alternative for psychomotor development in PE classes. In fact, no descriptive differences were observed between the students evaluated according to Fig. 2.





*Fig 2. Assessment by indicators*

Another interesting detail was the inaccuracy of orientation towards stimuli, as well as difficulties in initiating social interactions. The events found require the execution of a survey of the 14 PE teachers of the locality, to obtain information about the psychomotor development of students with ASD.

In this sense, 50% of the respondents considered that these students have difficulty adapting or learning new motor skills, 42% of them described as average the execution of gross motor skills, from executing broad body movements, how they run, how they jump and their balance.

In this regard, it was necessary to find out what teaching experience they have in teaching students with ASD; 64.3% declared their lack of experience in this practice, which limited the use of inclusion strategies or curricular adaptations in their classes.

Similarly, 50% of respondents expressed shortcomings in terms of the training they have received on this topic, in order to address in class the stereotyped or repetitive movements that affect their psychomotor development.



57.1% of teachers declared that they were unaware of the benefits that body language brings to students, so these elements were not useful in teaching activities, and could become useful tools for coordinated and sequential movements.

Hence, a body expression program was developed as an alternative for psychomotor development in students with ASD, whose activities are shown in Table 2.

*Table 2. Main activities of the program*

Activities	Aim	Task
Understanding basic needs, personal interests and daily activities.	Characterize the student's needs and abilities.	Use of pictograms that represent basic needs, personal interests and daily activities.
Visual games	Understand the body movements that are being worked on.	Creating images of the most frequently used movements, they can be drawn on cardboard, paper, etc. Serene movements of the teacher
Creation of activity agendas	Announce to the student through drawings or through objects, the sequence of activities that from the dance that are carried out during the day.	Developing an agenda with photos of dance steps, to give greater clarity to the student who still does not fully understand the drawings. Later, drawings can be used that represent the dance activities that are being addressed during the classes. These drawings should be simple and do not necessarily have to be so pretty.
Anticipation in changes of activities	Generate changes so that novelty or changes in activity do not surprise them.	Draw or show him a photo while explaining the situation he is going to experience next.



Listen to music	Stimulate imagination and creative ability.	Execute organized and synchronized movements to the rhythm of the music.
Guidelines for learning to feel music in all its forms Body.	Express emotions by moving to the rhythm of the music.	Development of self-confidence and the control and expression of their emotions through movements to the rhythm of music.
Insertion of these student in the classroom group to develop their choreographies and performances.	Express attitudes in collective activities.	Participation of conventional students, family and teachers in the execution of each activity carried out to establish a climate of camaraderie and support.

In this same order, it was necessary to establish some methodological indications that guaranteed the success of the proposal:

- Create an environment of trust and security for students (TEA).
- The physical structure of a place is the way in which spaces, furniture and materials are distributed, which informs the activity that is going to be carried out, as well as the materials that are going to be used. An organized and orderly environment allowed the student to remain in the activity and be motivated to learn.
- Choosing the right visual materials, whether drawings, slides, photographs or symbols, is a great help for students with ASD, both for learning and developing communication, as well as for increasing their understanding and regulating their behavior.
- It is essential for their development that they learn the meaning of the instructions given and that they follow them like their classmates.
- It is important for parents to be involved in activities and to practice them at home.



## DISCUSSION

For the PE discipline, the study of CM is necessary, since as Chaves et al. (2023) rightly point out, it is a complex evolutionary process of progressive acquisition, and it is a necessary capacity for effective performance in each of the human being's actions. The author highlights that the predominance of the application of the KTK battery has positioned itself as one of the main evaluation tools worldwide, although it does not contextualize it in students with special educational needs, the information it reveals for physical treatment from the subject's curriculum is evident.

Lima et al. (2023) model activities or techniques based on inclusion, to stimulate the development of gross and fine motor skills in students with DS. Their study is not for the same disability as the present research, but it makes clear that the diversity of activities or techniques facilitated attention to what they can do on their own, what help they need, to adapt and stimulate their demands and possibilities in the psychomotor sphere, and to offer different levels of help and interact directly with them, from observation.

In line with Cuaspa et al. (2023), body control and its movement actions constitute one of the major training goals in the curricular guidelines of the PE area, with the aim of guiding personal development and the development of educational, cultural and social processes in students, with the purpose of focusing them currently on the development of motor, expressive, bodily and axiological skills. For the case study, it corroborates the transformative need pursued in this research.

Gamboa (2023) reaffirms that inclusive practices become a fundamental tool for all students with ASD, as it helps them to boost potential, skills, attitudes and competencies for a more enriching, equitable teaching-learning environment. Although his research refers to regular education, there is agreement on the need to provide teachers with alternatives on how to work with them, understand their limitations and abilities; in turn, it explains step by step how these activities should be carried out.



Regarding EF, its integral role in motor development, the promotion of physical activity and the creation of inclusive environments is recognized, as proposed by Bedoya et al. (2023), this element reaffirms how, from the context of EF, body expression as an alternative can support psychomotor development, inclusion as a right and recognizes human diversity as a valuable element.

## CONCLUSIONS

In conclusion, it can be stated that the body expression program as an alternative for psychomotor development contemplated within its activities an option to resolve the weaknesses found in the motor coordination of students with TAE, from PE classes.

These generated a logic that developed from the simplest to the most complex, and for its success it was necessary to have the participation of parents and family members, as well as to practice the learned movements at home. The students analyzed responded positively to the programmed activities, so it can be stated that the objectives of this research were achieved.

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***Conflict of interest statement:***

The author declares that there are no conflicts of interest.

***Author's contribution:***

The author is responsible for writing the work and analyzing the documents.



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