PODIUM
Journal of Science and Technology in Physical Culture

Volume 19
Issue 3
2024

University of Pinar del Río “Hermanos Saíz Montes de Oca”

ISSN: 1996–2452 RNPS: 2148
*PODIUM Journal, September-December 2024; 19(3): e1680*

*Original article*

# *Methodological strategy for the inclusion of Goalball in Physical Education for visually impaired students*

*Estrategia metodológica para la inclusión de goalball en la Educación Física*

*Estratégia metodológica para a inclusão do Goalball na Educação Física para alunos com deficiência visual*

*Mariano Rafael Maldonado Chochos*[1*], *Johnny Santiago Delgado Velesaca*[1*], *Giorver Pérez Iribar*[2*], *Giceya de la Caridad Maqueira Caraballo*[1*]

[*1]Universidad Bolivariana de Ecuador

[*2]Universidad Laica Eloy Alfaro de Manabí Manta-Ecuador

Autor para la correspondencia: mrmaldonado2@espe.edu.ec

***Received:*** *12/07/2024*
***Approved:*** *08/08/2024*

***ABSTRACT***

Goalball is the only Paralympic sport created specifically for blind and visually impaired people and due to the characteristics of this activity, its inclusion in Physical Education

classes is beneficial. The objective of this paper is to develop a methodological strategy for the inclusion of visually impaired students in the practice of goalball during Physical Education classes at the Mariana de Jesus Special Institute for Blind Children at the Higher Basic General Education level. The research is based on a quantitative-qualitative approach using theoretical methods such as historical-logical, analysis-synthesis, induction-deduction, and empirical methods such as documentary analysis, observation, measurement, expert judgment, and pre-experiment. The results obtained by the established dimensions highlight the need for a transformation in Physical Education classes, so a methodological strategy with adaptive characteristics was designed, which was considered very appropriate by experts. The results obtained by implementing it assumed the changes generated between the pretest and the posttest, which allowed the inclusion and improvement of the quality of the students' motor skills and competencies.

**Keywords:** visual impairment, inclusive education, Physical education, goalball

***RESUMEN***

El goalball es el único deporte paralímpico creado específicamente para personas ciegas y deficientes visuales y por las características que posee esta actividad resulta beneficiosa su inclusión en las clases de Educación Física. El trabajo que se presenta tuvo como objetivo elaborar una estrategia metodológica para la inclusión de estudiantes con discapacidad visual en la práctica del goalball durante las clases de Educación Física, en el instituto especial para niños ciegos "Mariana de Jesús", en el nivel Educación General Básica superior. La investigación se sustentó en un enfoque cuantitativo-cualitativo donde se emplearon métodos del nivel teórico como el histórico-lógico, el análisis-síntesis, la inducción-deducción y del nivel empírico el análisis documental, la observación, la medición, el criterio de expertos y el prexperimento. Los resultados alcanzados por las dimensiones establecidas resaltan la necesidad de una transformación en las clases de Educaión Física, por lo que se diseñó una estrategia metodológica con características adaptativas, valorada de muy adecuada por los expertos. En los resultados que significaron su puesta en práctica, se asumieron los cambios generados entre el pretest y el postest realizado que permitieron

la inclusión y el avance de la calidad de las competencias y las destrezas motrices de los estudiantes.

**Palabras clave:** discapacidad visual, educación inclusiva, Educación Física, goalball

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***RESUMO***

O Goalball é o único esporte paralímpico criado especificamente para cegos e deficientes visuais e pelas características dessa atividade é benéfica sua inclusão nas aulas de Educação Física. O objetivo do trabalho apresentado foi desenvolver uma estratégia metodológica para a inclusão de alunos com deficiência visual na prática do goalball durante as aulas de Educação Física, no instituto especial para crianças cegas "Mariana de Jesús", no nível do Ensino Superior Geral. básico A pesquisa baseou-se em uma abordagem quanti-qualitativa onde foram utilizados métodos do nível teórico como histórico-lógico, análise-síntese, indução-dedução e do nível empírico análise documental, observação, medição, critérios periciais e pré-experimento . Os resultados alcançados pelas dimensões estabelecidas evidenciam a necessidade de uma transformação nas aulas de Educação Física, por isso foi desenhada uma estratégia metodológica com características adaptativas, avaliada como muito adequada pelos especialistas nos resultados que significaram a sua implementação, as mudanças geradas entre as. Assumiu-se o pré-teste e o pós-teste que permitiram a inclusão e o avanço da qualidade das competências e habilidades motoras dos alunos.

**Palavras-chave:** deficiência visual, educação inclusiva, Educação Física, goalball

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## *INTRODUCTION*

Inclusive education is a topic that must be addressed in all areas, especially in the social sphere, and there are various studies on the subject, but the need for further study remains latent, so finding solutions is a priority task for educators. Nowadays, in the educational field there is a widespread tendency to defend inclusive education as the best way to address the differences we find inside and outside of school (Sánchez-Rojo, 2023) .

Reyes et al. (2020) recognize inclusive education as a process to identify and respond to student diversity and achieve greater participation in the community and in their learning. This topic of great interest to the field of human and educational sciences requires an analysis of the research processes carried out, and from this, generate innovative strategies to implement school guidance.

Access to education on equal terms and learning opportunities is an aspiration and a commitment that must be assumed by all governments and public and private institutions. At the international level, and specifically in Ecuador, laws and agreements have been generated that have supported the process of inclusive education at all stages (Clavijo & Bautista-Cerro, 2020).

According to Vargas & Lojano (2023), in Ecuador there are significant advances in inclusive education; however, improvements are still required at the institutional level and especially in the educational system. It is a reality that educational inclusion requires measures from governments:

Offering each student the opportunity to learn and counteract the factors that negatively impact their learning; that is, they must respond to the diversity of children and young people as a mechanism to avoid expulsion or dropping out of school; recognizing diversity, in conditions of good comprehensive treatment and in educational environments that promote good living, established in the Ecuadorian Constitution (Romero, et al., 2023).

When referring to inclusive education, it is understood as the right of every person to obtain a quality education (Sánchez, et al., 2023) , and it should be one of the factors to be taken into account by teachers, since it improves the lives of people with disabilities and promotes their inclusion in society (Hernández, et al., 2022).

This research focuses on students with visual impairment (VI) that takes the form of blindness and low vision. Blind people do not receive any visual information; doctors often diagnose them as not perceiving light. In the case of people with low vision, even with glasses, they see significantly less than a person with normal vision; inclusive education

provides students with VI the same rights to education, and having a space adapted to their conditions guarantees them a full and enjoyable life.

Physical Education (PE) is a suitable setting to include students with disabilities who participate, exercise, enjoy and in many cases compete under similar conditions, according to their needs and opportunities, and as Hurtado & Bravo (2021) state, it is always necessary to address students and create interest on them, messages should be clear and precise, this is a very important factor that can encourage or demotivate; besides, it is always needed to consult whether the messages are understood, in the contrary case, it is necessary to use another language as far as they comprehend what to do.

In this sense, Campos et al. (2023) highlight the importance of physical sport activity in the design of sensitization and awareness program toward people in disability condition, and insist in goalball as adapted sport to achieve a change of attitudes in all ages and promote participation and sensitization aspects in PE classes

Adaptive sport is a sporting discipline whose rules can be practiced by people with physical, visual and intellectual disabilities. In the case of goalball, it is a Paralympic sport in which two teams made up of three players each compete on a court, throwing the ball with force until it enters the opponent's goal, while trying to stop the opposing team's shots so that the ball does not go in.

Goalball was developed in 1946 by German Hans Lorenzen and Austrian Seep Reindl to help people who lost their sight due to fighting in World War II. The sport was used to improve their sensory and physical abilities, as well as to reintegrate them into society.

In this game, the sense of touch must be used to determine the direction of a sound ball that must cross the entire field until it reaches the opponent's goal, they must also pass through areas where the ball must touch the neutral zone at least once, in order to overcome the barrier formed by three players and obtain a point in their favor. Goalball can be played by DV who are blind or visually impaired and belong to the medical classifications established

by the International Blind Sports Association (IBSA) B1, B2 and B3. B1: no light perception, B2: ability to recognize the shape of a hand, and B3: reduced visual field.

To introduce the youngest children to the sport of goalball, the sound ball is fitted with bells and is made of high-density foam material with holes that make it easier to grip. Goalball is a Paralympic sport created specifically for blind or visually impaired people. The objective of the work presented was to develop a methodological strategy for the inclusion of visually impaired students in the practice of goalball during PE classes at the "Mariana de Jesús" special institute for blind children, at the higher level of Basic General Education (EGB).

## *MATERIALS AND METHODS*

Taking into account the criteria of Hernández & Mendoza (2018), the research presented had a mixed approach since it was based on collecting, analyzing and integrating both quantitative and qualitative research, for a better understanding of the inclusion of students with VD in the practice of goalball; observation, measurement and survey were used as instruments and techniques for collecting information.

According to the objective, it was defined as applied research, since a study was carried out in order to find a solution to the individual needs of students with VD, to move especially in unfamiliar environments and to achieve a correct spatial-temporal location; therefore, physical movement was a challenge.

In the same order, the depth of the research was descriptive, on the investigation and analysis of the inclusion of students with VD, in the PE environment. The population was 13 male and female students, aged between 10-15 years, from the higher EGB level, from the special institute for blind children "Mariana de Jesús" (Table 1).

***Table 1.*** *Characterization of the study population*

| Population | Age and sex | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ophthalmological diagnosis | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | |
| | F | M | F | M | F | M | F | M | F | M | F | M |
| Low vision | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 2 |
| Blindness | | 2 | | | | 1 | | | 1 | | | |
| Total | | 2 | 1 | 1 | | 2 | 1 | 1 | 2 | 1 | | 2 |

The inclusion of students with VD in the practice of goalball was identified as a variable to be transformed; in the process of successive referrals, the physical-motor state of the student was identified as a dimension and motor skill and space-time location as indicators, which allowed the approach to the investigated reality (Table 2).

***Table 2.*** *Dimensions, indicators and reference parameters*

| **Dimensions** | **Indicators** | **Parameters** | **Assessment** | | |
|---|---|---|---|---|---|
| | | | B | R | M |
| **Physical motor** | Motor skills | I Arm Strength (Planks) | | | |
| | | II Abdominal Strength (Abdominal) | | | |
| | | III Reaction rate (Time) | | | |
| | | IV Displacement | | | |
| | | V Releases | | | |
| | Space-time location | VI Relationships with its environment in space | | | |
| **Formative** | Cooperation | VII Working together to achieve a common purpose | | | |
| | Social integration | VIII Contributes to group cohesion | | | |
| | Standardization | IX Respect for the rules of the game that regulate its practice and shape the main particularities of the game | | | |

*Source: Own elaboration*

Meanwhile, the evaluative reasoning was organized as follows (Table 3):

***Table 3.*** *Evaluation criteria for the reference parameters*

| | |
|---|---|
| I and II Parameter | B: Fluency and coordination in he movement and achieve at least five (5)<br>R: Perform the movement with some lack of coordination and achieve at least (3)<br>M: No achieves carry out he motion |
| III Parameter | B: (0.2 – 0.3) seconds<br>R: (0.4-0.6) seconds<br>M: + 0.7 seconds |
| IV Parameter | B: In a straight line at a distance of 4 meters in (0.6-0.8) seconds<br>R: In a straight line at a distance of 4 meters in (0.10-0.12) seconds<br>M: In a straight line at a distance of 4 meters in (+0.13) seconds |
| V Parameter | B: Throwing an object at a distance of more than 5 meters<br>R: In throwing an object a distance of (4-3) meters<br>M: In throwing an object a distance of (-2) meters |
| VI Parameter | B: Correctly shows relationships with their environment in space<br>R: It shows impressions in the relationships they have with their environment in space<br>M: They have few relationships with their environment in space. |
| VII Parameter | B: Working together to achieve a common purpose<br>R: It doesn't always work together to achieve a common goal.<br>M: Fails to work together to achieve a common purpose |
| VIII Parameter | B: Contributes to group cohesion<br>R: It does not always contribute to group cohesion.<br>M: It fails to contribute to group cohesion |
| IX Parameter | B: Respect for the rules of the game that regulate its practice and shape the main particularities of the game<br>R: I do not always respect the rules of the game that regulate its practice and shape the main particularities of the game.<br>M: He does not know the respect for the rules of the game that regulate his practice and shape the main particularities of the game |

*Source: Own elaboration*

The theoretical methods used were historical -logical to understand the progress of educational inclusion, its fundamental historical links, general and main laws of its operation, and development and determination of trends to establish a relationship with PE and these in turn, with the DV of the students.

The analysis-synthesis allowed to break down the object into its parts and qualities and to perceive the essential elements that characterize it, it revealed the fundamental relationships, the originalities and generalities existing between them and the main

relationships to establish the antecedents and tendencies that decreed the behavior of said process and the theoretical foundation of the research.

Induction-deduction, to make inferences and generalizations from the singularity of educational inclusion, as well as for the integration and interpretation of data obtained in the development of the methodological strategy, from the general to the particular.

Among the empirical methods, the documentary review facilitated the exploration of the content of the normative documents that govern the educational inclusion of students with VD, as well as those established for the development of the curricula and plans of the PE subject, in the special institute for blind children "Mariana de Jesús" .

Progress Report on the teaching-learning process of students with special educational needs associated with and not associated with disabilities was also assessed to characterize the population of students with special educational needs that was studied. While the observation was carried out in five scheduled PE classes, to verify the treatment provided to the needs, preferences and possibilities of students with VD in the context of the class; it was important the implementation of evidence physical and a measurement to the students, for know his behavior physical before of apply physical loads on the classes.

Likewise, expert criteria were used for the theoretical assessment of the proposed strategy and the pre-experiment to compare the results before and after the strategy was implemented. Inferential statistical procedures were used, such as the Wilcoxon marked rank test to check for significant changes between the results obtained before and after the proposal was implemented, where in the pre-experiment the possibility of students with VD to practice goalball during PE classes was assessed, and its practical feasibility was established.

## *RESULTS*

The correspondence between the theoretical methods showed that inclusive PE improved the quality of life of all participants, through the development of physical and motor skills and competencies that had a favourable impact on their health, safety and autonomy. It was

a space for interrelation that respected different conditions and abilities. In addition, it allowed all students to cooperate and show respect for differences, supporting them in daily life and for their independence.

The documentary review was carried out on the Report on progress in the teaching-learning process of students with special educational needs associated with and not with disabilities. The record that the special institute for blind children "Mariana de Jesús" has on the students who make up the population of this study is unquestionable (Figure 1).

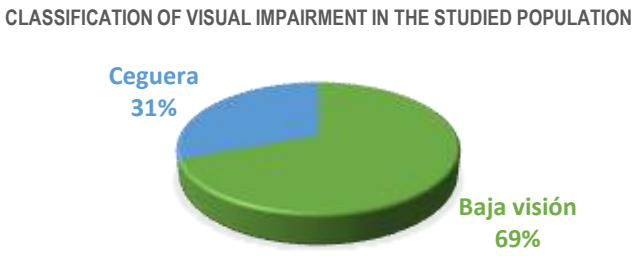



***Figure 1.*** *Classification of (DV) in the studied population*

100% of the students in the sample presented VD, 31% with difficulty and blindness, among the recommendations were to acquire orientation and mobility techniques to exercise their autonomy and independence; 69% presented disadvantages in the educational process, in terms of independence, learning and adaptation and showed some limitation for the correct interpretation of the stimuli, which caused a delay in the acquisition of object permanence .

Although in all cases there was progress in the records analyzed, they were recommended training in functional life skills, and in only one student, training for impulse control, situations that were considered to be transformed with the practice of goalball in PE classes.

The curriculum was assessed of PE for the GBS school level, in this document are designed six blocks made up of skills with performance criteria that bring together a series of knowledge, procedures and attitudes considered basic to be taught, where Block 4. Sports practices takes effect for this study.

The review of the EGB higher education curriculum of PE, in the skills matrix with performance criteria; PE 4.4.1 proposes practicing different types of sports (individual and collective; closed and open; outdoors or in covered spaces; invasion, in nature, among others; identifies similarities and differences between them and recognizes modes of participation, according to the sports field (recreational, federative, high performance, among others), to consider necessary requirements that allow continuing its practice.

In PE 4.4.4, the student is exposed to participating in sports, sports games and modified games, understands their different logics, objectives and rules, uses different tactics and strategies to solve the problems that arise, assumes a role and values the importance of help and teamwork, as essential to achieve the objective of said practices.

Opportunities provided by the curriculum to make adjustments or modifications that facilitated the educational inclusion of DV students who like to practice goalball and that can be practiced from the PE class.

An important element for carrying out the practice of this adapted sport were the needs, preferences and possibilities of students with VD, from the context of the class, so an observation was applied to five PE classes and the results are shown in Figure 2.

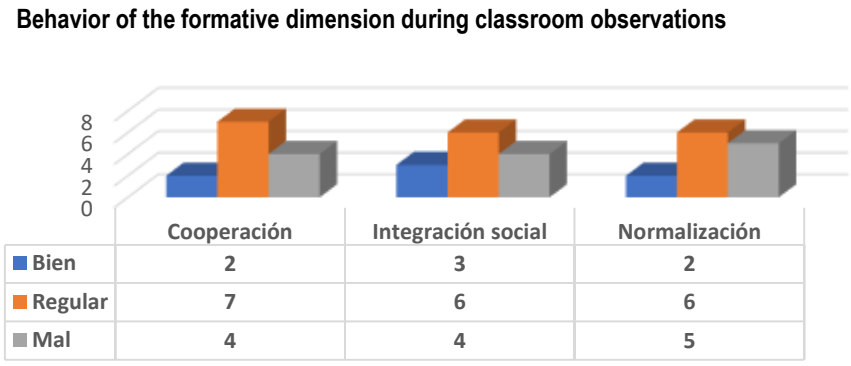



***Figure 2.*** *Behavior of the formative dimension during observations of (PE) classes*

It is observed that there are difficulties in the three indicators observed during the five PE classes, between 53.8% and 31% showed limited interpretation of the information provided by the teacher, which caused that on repeated occasions, behavioral changes in their relationships with others were manifested. 69% of the students had difficulties establishing a bond due to a lack of eye contact and found limitations in perceiving and following other students, so 76.9 % preferred to ignore the activity. Fears were also common, as was expressing the need to learn to orient themselves and move around in space.

Observation allowed to outline the need to acquire orientation and mobility techniques to exercise autonomy and independence. Consequently, to assess the physical-motor dimension, a measurement was applied to through of evidence physical, where the behavior of the skills of the students with VD who participated in the study was known.

The physical-motor dimension was measured with two indicators. In the motor skill indicator, five parameters were assessed that revealed the conditions in which the students were able to practice goalball during PE classes. Although they showed a high willingness to do the activity, only 7.6% managed to perform the arm flexion and extension movement (planks) fluently and coordination in the movement and perform six movements, it was striking that 69.5% did not achieve values in this test and were evaluated poorly.

In abdominal strength, the results were also unfavorable, in that case between 38.5% and 46.1% were evaluated as average and poor respectively, as they lacked strength, the movements in the execution were uncoordinated and lacked fluidity. The reaction speed was carried out in three moments to choose the best time and they had to react to the auditory stimulus generated by the teacher and in 53.8% it was estimated at more than 0.9 seconds; therefore it was evaluated as poor.

The same events occur both in the displacements and in the throws where the most relevant percentages were valued poorly, as shown in figure 3.

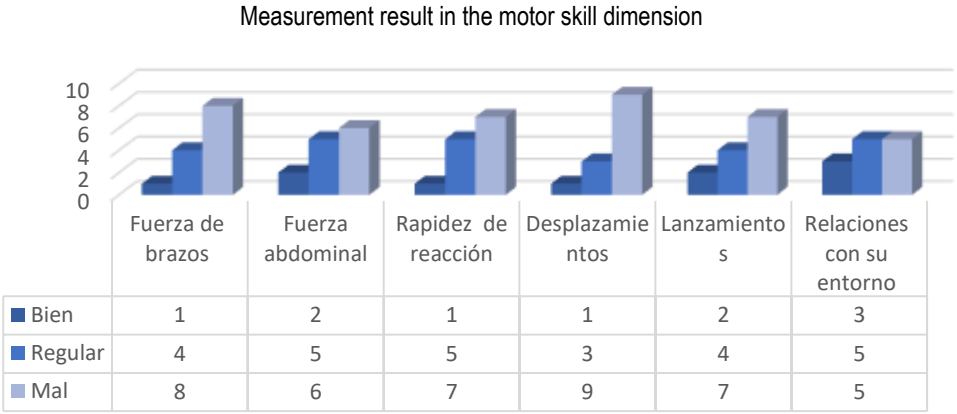



***Figure 3.*** *Measurement result in the physical motor dimension. Source: Own elaboration.*

Although the results by parameters were unfavorable, the greatest relevance was in the arm strength and the movements, elements of great significance for a goalball player, from this , in the space-time location indicator, only 23.01% showed correct relationships with their environment in the PE class space, a place where a good emotional and psychological environment was achieved; it promoted learning and reinforced the development of social, cognitive reciprocities and physical abilities of the students; 76.9 % lacked, to a greater or lesser extent, the ability to select and analyze information, which prevented them from making correct decisions regarding the calculation of space and time.

When comparing the values achieved by the dimensions established for this study, the physical-motor dimension was the one that showed the greatest deficiency and highlighted the need for a transformation from the PE classes, to modify the skills shown by students with VD, which respond to their needs, possibilities, tastes and preferences (Figure 4).

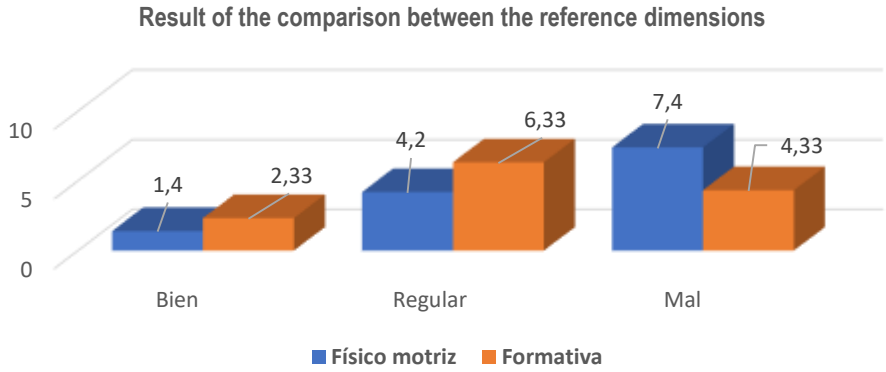



***Figure 4.*** *Result of the comparison between the physical-motor and formative dimensions. Source: own elaboration*

In the case of the formative dimension, the qualities that were necessarily developed in the practice of goalball were analyzed in unison. With the objective of solving the problems detected in the practice and overcoming difficulties in the shortest time, saving resources, a strategy was designed that allowed projecting a qualitative change in students with DV, in the PE class, starting from detecting and treating contradictions between the current state and the desired one, which involved planning actions aimed at achieving this goal.

For this research, the term strategy was assumed as the set of sequential and interrelated actions that start from an initial state (given by the diagnosis) and allow directing the step to an ideal state as a result of planning (Valle Lima, 2010). The strategy that was presented was conceived with sequential and interrelated actions, aimed at organizing the inclusion and development of students with DV, from the objectives proposed for each stage.

The proposal aimed to promote the inclusion of students with visual impairments in the practice of goalball during PE classes. It was based on the basic principles of inclusive education with an emphasis on students with VD, where three fundamental rights were established: the right to education, to equal opportunities, and to participate in society; as well as the principles of PE, considering it with a physical and educational approach that was based on variability, comprehensiveness, diversity and the treatment of motor behaviors of schoolchildren with visual impairments, with the purpose of physical exercise as a means used to contribute to education.

All these elements facilitated the establishment of three stages for the strategy given by a stage to diagnose the students in the physical-motor and formative dimensions. This information provided the formulation of the objectives directed towards the teaching and consolidation of the technical and tactical foundations of the goalball game during PE classes, and its correspondence with the real possibilities of the students and the motor skills to be achieved for this purpose.

It is important to remember that goalball is a team sport for blind players, based on the use of the auditory sense to detect the trajectory of the ball in play, and requires a great capacity for spatial orientation and being located at the right place at all times, with the aim of intercepting or throwing the ball; and that each game lasts twenty minutes, divided into two parts of ten minutes each.

The team consisted of three players on the court, who threw the sound ball rolling with power and placement to get it into the opponent's goal, while trying to stop the opposing team's shots to stop the ball from going in. As for the ball, it was sound, with bells, made of high-density foam material with holes that made it easier to grip, weighing 300 grams, light enough to be easily handled during the game, but heavy enough to be thrown accurately and to allow active participation in the sporting activity.

Hence the importance of this diagnostic stage, in order to enter into the second stage of planning and execution, focused on the objective to be met, the organization of the content and strengthening the methods to be used to make the proposal viable. Among the actions in this second stage, it was important to work with the perception of the students, their location on the field where the games were developed, touching the ball, the sound of the whistle and the voice of their classmates.

The first recommended activities were pairs with the support of the teacher and advanced students to build trust and motivate them to participate in a joyful and conscious way, in that same order giving them tasks to make them feel important within the game. Among the contents to be taken into account in this first moment, the game was considered in a

perceptive way, trying to guess where the ball went, catching it with the hands without throwing oneself to the ground and working on stopping.

Another important content to consider was the throwing, first the adaptation to the ball, becoming familiar with the correct movement, varying the distances and directions and above all offering confidence to achieve the task and having fun with its realization; going from the simple to the complex in the teaching of the elements of the game and guaranteeing the inclusion of all. In the evaluation stage of the students' development, as in the inclusion process that was carried out, the same dimensions and indicators used were handled.

It is important that the student progressively learns and masters his/her spatial-temporal location, the management of mental images and language in the field of PE as an environment of realization; in addition, the methods, means and techniques for the execution of the competencies of the sport, created for people with VD, as well as the methodological recommendations were taken into account.

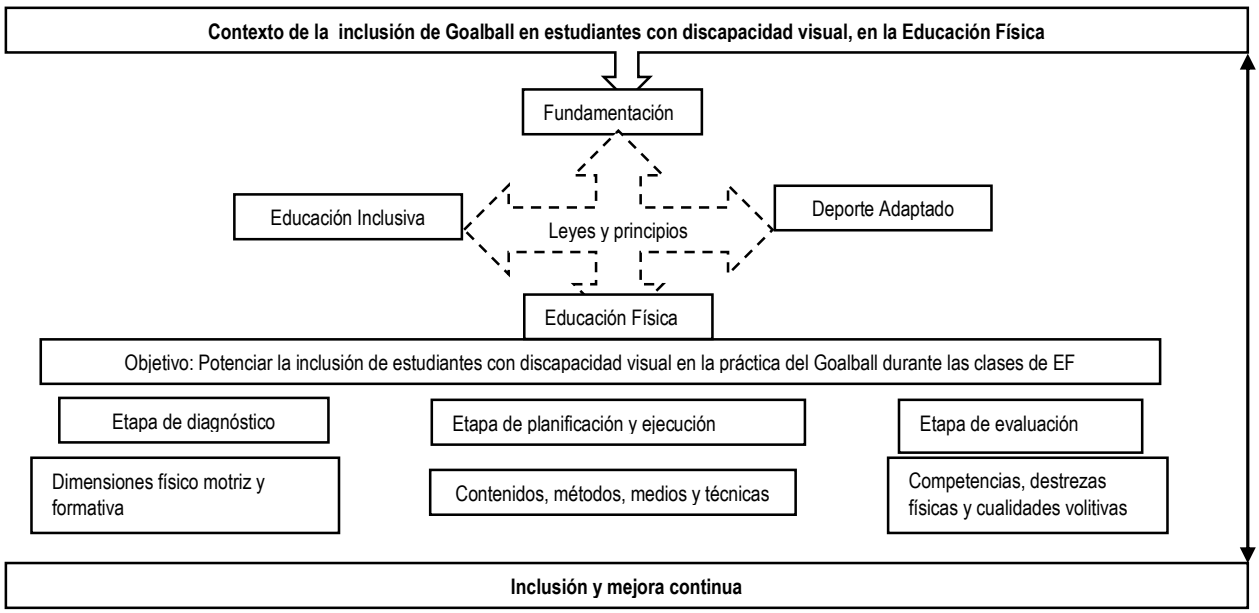



***Figure 6.*** *Graphic representation of Methodological strategy. Source: Own elaboration*

The proposal emphasized the possibilities offered by the institution's work system, which allowed for the systematization, completion, expansion and updating of

The proposal was contextualized in that the specificities that characterized and particularized the development of educational inclusion were determined; it was formative, by facilitating the acquisition of knowledge, developing skills, attitudes and values from a transformative action, in students with DV; and creative, by promoting initiative and the search for solutions to the problems of PE.

Likewise, it was dynamic, as the components were constantly transformed based on the new pedagogical realities and the process of transformation was materialized; open, allowing, from the essence that distinguishes it, the enrichment of the specific framework of application, where students with VD and teachers contributed new nuances.

Flexibility, in the complex and changing pedagogical reality and the problems that were manifested in the development of the PE class, with emphasis on the practice of goalball , potential of the terrain, the school, the community and the environment in general; hence the need to take into consideration the diversity of proposed solutions, to be planned, implemented and controlled based on the real possibilities of the student with VD, the teachers and the center.

The theoretical assessment of the methodological strategy for the inclusion of students with VD in the PE class was carried out by expert criteria. A consensus of informed opinions was obtained about the proposal, its structure and functionality. Seven experts were selected based on their willingness to participate in the evaluation of the proposal, their professional prestige, their self-criticism, and their analytical skills, with more than 12 years of experience. All of them were PE teachers with experience in inclusive education, with a competence coefficient that ranged between 0.8 and 1, which was considered high.

A guide for the evaluation of the proposal by experts was applied at first, with the aim of knowing the opinions about the strategy. The evaluations issued by the specialists using the Kendall coefficient of concordance (W) was W=0.83 with significance p=0.0001; which

revealed the acceptance of the proposal presented . However, the applied instrument had qualitative evaluations about the proposal that provided important ideas for the restructuring of some elements and provide the following estimate:

- The theoretical-methodological and practical conception of the strategy reflected the theoretical principles that supported it from inclusive education, PE and adapted sport (very appropriate).
- Great importance was given to personalized diagnosis (very appropriate).
- Novel and feasible for the care of students with VD, from the PE class (very appropriate).
- It allowed monitoring of the proper development of competencies and motor skills of students with VD, which facilitated their incorporation into PE classes (very appropriate).
- Level of satisfaction with the strategy as a solution to the problem and real possibilities of its implementation (very adequate).
- Structural and methodological conception of the proposal to promote the achievement of the objective (very appropriate).

Some suggestions and reflections were taken into account, which helped constructively in the final version of the proposal. The experts valued the relevance and correspondence of the strategy with the dynamics of inclusive education today and with the opportunity that goalball offered to students with VD. 100% of the experts consulted agreed with the qualities of the strategy, which set guidelines in its construction, with the category of very appropriate.

Once the experts' results were known and in order to confirm practical feasibility, the methodological strategy was implemented in the context of the PE class. An experimental check was applied, for which the instruments were validated and processed, based on predetermined dimensions and indicators, which allowed the evaluation of the knowledge and performance of students with VD.

The phenomenon to be studied through the pre-experiment was the inclusion of goalball in students with VD, in PE. The strategy was implemented from March 2023 to February 2024. In the diagnostic stage, based on the application of instruments where the needs and potentials were determined, the results of the initial diagnosis were analyzed and the contents to be covered in the classes were discussed.

The starting point of the strategy was the records obtained in the classes developed, the verification of each element dealt with in them, the critical interpretation, the students with VD as protagonists of the educational process, the conclusions and it was possible to transform and organize the first goalball team in the special institute for blind children "Mariana de Jesús", to demonstrate the practical feasibility of the proposal and positively influence the improvement of the social and physical practices of students with VD from the PE class (Figures 7 and 8).

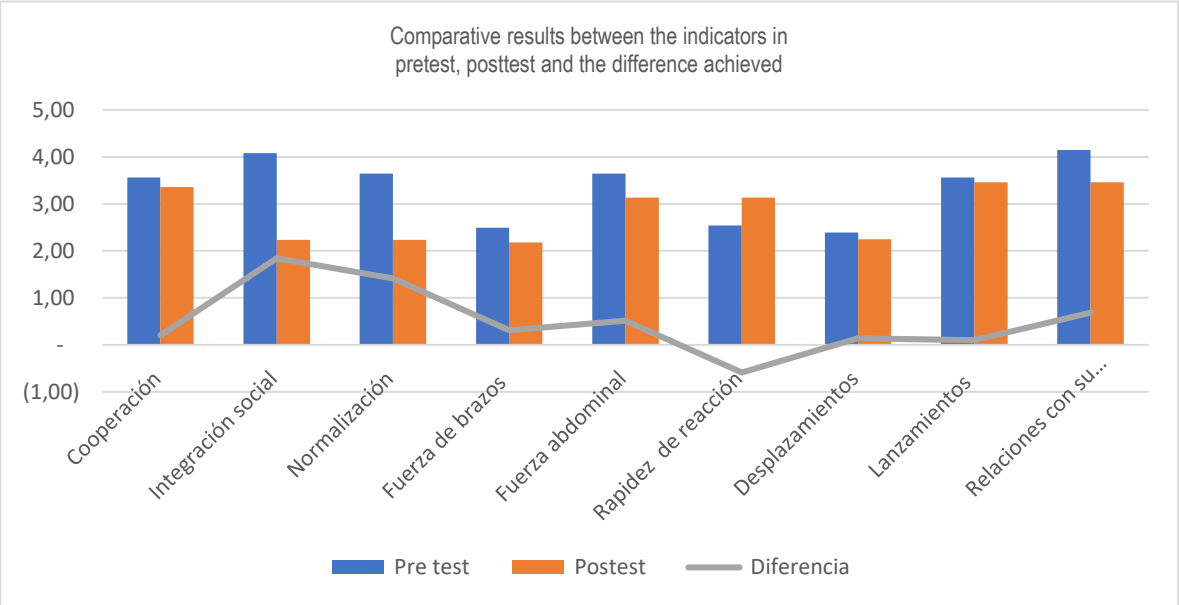
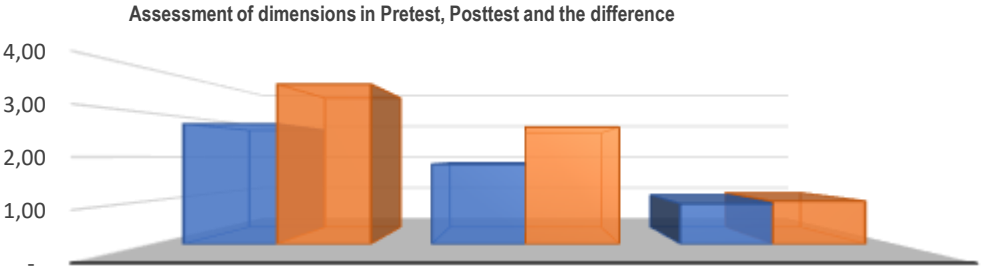



***Figure 7.*** *Results of the comparison of the indicators in pretest, posttest and the difference generated. Source: Own elaboration*




| | Pre test | Postest | Diferencia |
|---|---|---|---|
| Físico motriz | 2,76 | 1,83 | 0,93 |
| Formativa | 3,67 | 2,69 | 0,99 |

***Figure 8.*** *Assessment of reference dimensions in pretest, posttest and the existing difference.*

*Source: own elaboration*

To check for significant changes between the results obtained before and after the strategy was implemented, the Wilcoxon marked rank test was applied. It was taken into account that the data correspond to an ordinal measurement level, with a reduced range of possible values (inadequate 2 points, slightly inadequate 3, adequate 4 points, very adequate 5 points); in addition to being data from a small population (n = 13). Differences were considered important if the significance of the á 0 test was less than or equal to the preset significance level, á = 0.05, and the data were processed by the Statiscal Package for the Social Sciences, Personal Computers (SPSS version 20) information system for Windows.

In general, when comparing the results of the pretest and the posttest, after the strategy was implemented, significant changes were observed in the two corresponding dimensions and indicators.

## *DISCUSSION*

Educative inclusion guarantees the right to a quality education for all students under equal conditions and pays special attention to those with special educational needs, seeking to guarantee equitable access to education that promotes comprehensive development,

diversity and characteristics, from adapted pedagogical approaches and specialized methodological strategies that ensure learning (Calero et al., 2024) .

Using innovative teaching strategies provides students with special educational needs, regardless of their characteristics, with a reference for inclusion in their learning and normalization from differences; consequently, Navamuel (2024) refers that goalball allows people with visual disabilities to practice the sport, but this game is not only aimed at them, it consists of everyone participating in it, in integrating people who may have a special educational need, such as blindness in this case.

It is the teacher's duty to know the characteristics of his group and his students individually, for Llerena & Solórzano (2023), the presence of a disability in people may depend on their motor skills, IQ, health status and the way they relate; elements of importance for practice, from the PE environment.

Lozano et al. (2023) suggest that for the approach from the PE class of students with intellectual disabilities, the initial multidisciplinary diagnosis is essential, although the author refers to another disability, it is considered to be interesting for the didactic treatment of others, and even for those who do not have them. Such reasoning allows that in the methodological strategy presented, among its stages, a diagnosis is raised as a necessity that guarantees the starting point for the efficient practice of goalball for students with DV.

Goalball is a Paralympic sport created specifically for people with VD, and in the area of PE and is used as educational content, which also encourages the inclusion of students (Gamonales, et al., 2023).

## *CONCLUSIONS*

The bibliographic reviews carried out provided information about inclusive education, the characteristics of inclusive PE, people with VD and goalball as a sport, in addition to assuming it in the design with a flexible proposal, from the curricular adaptation.

The principles of the strategy, as well as the sequence of the planned actions, guaranteed its success, as confirmed by the experts' assessment of its suitability. The results of its implementation included the changes generated between the pretest and the posttest carried out, which allowed the inclusion and improvement of the quality of the students' motor skills and competencies.

## *REFERENCES*

Calero, JCG, Calero, CGG, & Toaquiza, GMC (2024). A look at school education and methodological strategies in children with special needs. *Revista Social Fronteriza* , *4* (2), Article 2. https://doi.org/10.59814/resofro.2024.4(2)204

Campos-Campos, K., Del Pino, I., Peña, E., Valderrama, C., Wall, C., & Cáceres, F. (2023). Effect of an intervention based on Paralympic sports on attitudes towards the inclusion of students with disabilities in Physical Education classes. *Spanish Federation of Associations of Physical Education Teachers (FEAD , 50* , 644-650.

Clavijo Castillo, RG, & Bautista-Cerro, MJ (2020). Inclusive education. Analysis and reflections on Ecuadorian higher education. *Journal of Education* , *15* (1), 113-124.

Gamonales, J.M., Hernández-Beltrán, V., Gámez-Calvo, L., & Muñoz-Jiménez, J. (2023). Analysis of the benefits of practicing goalball during physical education classes. *EA, Open School* , *26* , 73-89. https://doi.org/10.29257/EA26.2023.06

Hernández-Beltrán, V., Gámez-Calvo, L., Luna-González, J., & Gamonales, JM (2022). PROPOSAL FOR A TEACHING UNIT FOR PHYSICAL EDUCATION: "UNDERSTANDING SPORTS FOR PEOPLE WITH CEREBRAL PALSY". *Campo Abierto, Journal of Education* , *41* (1), Article 1. https://revista-campoabierto.unex.es/index.php/campoabierto/article/view/4173

Hernández-Sampieri, R., & Mendoza, C. (2018). Research methodology. The quantitative, qualitative and mixed routes. *Digital University Journal of Social Sciences (RUDICS) , 10* (18), 92-95. https://doi.org/10.22201/fesc.20072236e.2019.10.18.6

Hurtado-Guamán, PV, & Bravo-Navarro, WH (2021). Methodological proposal adapted to students with visual disabilities in Physical Education. *Koinonía Interdisciplinary Peer Review Journal* , *6* (2), 346. https://doi.org/10.35381/rkv6i2.1243

Llerena, IMM, & Solórzano, RWV (2023). Handball as an educational inclusion strategy in physical education classes. *Dominio de las Ciencias* , *9* (2), Article 2. https://dominiodelasciencias.com/ojs/index.php/es/article/view/3398

Lozano, HR, Cuestas, CAR, & Reina, MQ (2023). Special and inclusive education for intellectual disabilities, a perspective from Physical Education. *Perspectivas Journal* , *8* (1), Article 1. https://doi.org/10.22463/25909215.3801

Reyes-Parra, PA, Moreno Castiblanco, AN, Amaya Ruiz, A., & Avendaño Angarita, MY (2020). Inclusive education: A systematic review… Paola Reyes-Parra et al. REOP. Vol. 31, No. [3] , 3rd Quarter, 2020, pp. 86108 [Electronic ISSN: 1989-7448] 86 INCLUSIVE EDUCATION: A SYSTEMATIC REVIEW OF RESEARCH IN STUDENTS, TEACHERS, FAMILIES AND INSTITUTIONS AND ITS IMPLICATIONS FOR EDUCATIONAL GUIDANCE. *Revista Española de Orientación y Psicopedagogí* , *31* (3), 86-108.

Romero Jácome, FA, Parreño Sánchez, J. del C., Carrera Erazo, SC, & Procel Ayala, MR (2023). *Inclusive education in Ecuador. Characteristics and strategies | Academic Synergy* . *6* (1). http://www.sinergiaacademica.com/index.php/sa/article/view/104

Sánchez, JLM, Cobeña, EID, Sánchez, YKM, & Ponce, M.E.B. (2023). Perceptions on Inclusive University Education in Students with Visual Disabilities. *Multidisciplinary Peer-Reviewed Scientific Journal PENTACIENCIAS* , *5* (2), Article 2. http://www.editorialalema.org/index.php/pentaciencias/article/view/499

Sánchez-Rojo, A. (2023). For an inclusive education free of ableism: The importance of otherness as a foundation. *Pedagogical Studies (Valdivia)* , *49* (2), 341-356. https://doi.org/10.4067/S0718-07052023000200341

Valle Lima, AD (2010). *PEDAGOGICAL RESEARCH: ANOTHER VIEW* .

Vargas, ICA, & Lojano, NJC (2023). Local knowledge in inclusive education policies in Ecuador: A systematic review. *Revista Social Fronteriza* , *3* (4), Article 4. https://doi.org/10.59814/resofro.2023.3(4)101-118

***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.