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Original article

Inclusive recreational activities in Physical Education class, for students with laterality disorder

Actividades recreativas inclusivas en la clase de Educación Física, para estudiantes con trastorno de lateralidad

Atividades recreativas inclusivas na aula de Educaçao Física para alunos com transtorno de lateralidade

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ABSTRACT

In Physical Education, motor laterality must be developed at an early age. The objective of this research was to comprehensively analyze the laterality of tenth-year students in Physical Education class, based on their needs and perceptions, for the design of inclusive recreational activities that address laterality disorders. The study was explanatory and cross-sectional with a mixed approach and was developed in eight private educational institutions in the city of Quito. 14 teachers were selected for the interview and 688 tenth-grade students were evaluated with the validated Harris test; 40 of them were identified

with laterality disorder, and a survey was applied to them, so that an intervention proposal for inclusive recreational activities that address this disorder. The data was analyzed in Excel, after having applied a Likert scale in the survey, to understand the experiences, perceptions and adaptations in depth. This research sheds light on the importance of considering laterality in the design of inclusive recreational activities. It also showed that curricular adaptation and personalization are key to addressing the specific needs of these students.

Keywords: learning, recreational activities, inclusion, laterality

RESUMEN

En la Educación Física la lateralidad motriz se debe desarrollar a temprana edad. El objetivo de esta investigación fue analizar de manera integral la lateralidad de estudiantes de décimo año en la clase de Educación Física, a partir de sus necesidades y percepciones, para el diseño de actividades recreativas inclusivas que aborden trastornos de lateralidad. El estudio fue de tipo explicativo y corte transversal con un enfoque mixto y se desarrolló en ocho instituciones educativas particulares de la ciudad de Quito. Se seleccionaron 14 docentes para la entrevista y se evaluaron, con el test validado de Harris, a 688 estudiantes de décimo año, se identificó a 40 de ellos con trastorno de lateralidad, y se les aplicó una encuesta, con lo que se pudo diseñar una propuesta de intervención de actividades recreativas inclusivas que aborden este trastorno. Los datos se analizaron en Excel, luego de haber aplicado una escala de Likert en la encuesta, para comprender las experiencias, percepciones y adaptaciones en profundidad. Esta investigación arroja luz sobre la importancia de considerar la lateralidad en el diseño de actividades recreativas inclusivas, además se evidenció que la adaptación curricular y la personalización son claves para atender las necesidades específicas de estos estudiantes.

Palabras Clave: aprendizaje, actividades recreativas, inclusión, lateralidad

RESUMO

Na Educação Física a lateralidade motora deve ser desenvolvida desde cedo. O objetivo desta pesquisa foi analisar de forma abrangente a lateralidade dos alunos do décimo ano das aulas de Educação Física, a partir de suas necessidades e percepções, para o desenho de atividades lúdicas inclusivas que abordem os transtornos de lateralidade. O estudo foi explicativo e transversal com abordagem mista e foi desenvolvido em oito instituições de ensino privadas da cidade de Quito. Foram selecionados 14 professores para a entrevista e 688 alunos do décimo ano foram avaliados com o teste de Harris validado, 40 deles foram identificados com transtorno de lateralidade, e foi aplicado um questionário a eles, para que fosse apresentada uma proposta de intervenção para atividades lúdicas inclusivas que abordassem esse assunto; transtorno. Os dados foram analisados em Excel, após aplicação de escala Likert na pesquisa, para compreender em profundidade as experiências, percepções e adaptações. Esta pesquisa esclarece a importância de considerar a lateralidade na concepção de atividades recreativas inclusivas. Também mostrou que a adaptação curricular e a personalização são fundamentais para atender às necessidades específicas desses alunos.

Palavras-chave: aprendizagem, atividades recreativas, inclusão, lateralidade

INTRODUCTION

Laterality is defined as an intrinsic characteristic of the human being to efficiently perform a variety of motor and cognitive activities with one side of the body. In substantiating this concept, Medina (2020) states that the left or right side of the body prevails in its functionality with the use of the hand, foot, eye and ear; this is due to the lateral organization of the human brain, in which the hemispheres have specific functions, that is, it involves collaboration between hemispheres and communication, throughout the body.

Based on the above, laterality in children is transcendental because it plays a fundamental role for motor development, coordination, spatial awareness and self-confidence (Sánchez

and Briones, 2022); also because it influences the learning process, specifically, reading, writing and is related to certain actions that imply bodily control (Rosero, 2022).

Based on this, it is imperative to address body laterality in depth from the educational context as a multifaceted factor that encompasses physical and cognitive aspects. In the subject Physical Education (PE), this development starts from the Preparatory Sublevel, that is, from the first year of Basic General Education, in which students experience gradual and significant progress (Posso and Barba, 2023).

According to the National Curriculum of Physical Education (2016) and the Ministry of Education of Ecuador (2017), it is evident in the skills with performance criteria the approach to physical, expressive and recreational activities; the development of awareness of the left and right; the affirmation of body localization, the strengthening of specific coordination, the consolidation of lateral dominance and the integration with cognitive skills.

However, although the development of laterality is addressed in the curriculum, it is recognized that some students need personalized support (Posso et al., 2022), so it is important to identify the specific educational need not associated with the disability as is the case of laterality disorder, this in conjunction with the Student Counseling Department of the institution.

The laterality problems, according to Pita and Briones (2023), occur because teachers did not identify them at an early age, that is, at the initial educational level, students are not motivated to participate in motor activities inside and outside the educational institution such as throwing, catching, rolling, spinning, running, chopping, drawing and painting, among others that develop laterality. This causes difficulties in spatial perception and orientation, as well as confusion and incorrect use of left and right.

The challenges are significant in motor and cognitive development, which can affect performance in physical and recreational activities. These disorders manifest themselves in difficulties coordinating bilateral movements, problems in identifying lateral dominance

(right or left), and limitations in the precise execution of tasks that require the integrated use of both parts of the body.

Furthermore, laterality disorders manifest as crossed and heterogeneous laterality (Vejar et al., 2023), which can limit the execution of daily tasks and school performance. For example, they have an irregular learning pace, they are very active or passive, they have difficulties concentrating, they have frequent forgetfulness, difficulties with reading and writing, tempo-spatial alterations and they do not coordinate their movements, which affects their self-esteem and security.

In this sense, it is important to establish that up to the age of 10, different activities can be applied to develop the laterality of students who follow the curricular line, such as the application of the playful approach in all classes (Posso et al., 2020), with this, adequate motivation for students to carry out all activities is generated; for this, it is necessary to plan the development of content contextualized to inclusive recreational activities that address laterality disorder from different aspects, to promote an equitable learning environment.

In the context of PE, it is essential to recognize laterality as a crucial component for performance and participation in classes. The non-affirmation of laterality negatively influences the performance of motor skills and limits the capacity of students to execute precise and coordinated movements; that is why, it becomes necessary to adapt physical and recreational activities so that they are inclusive and accessible to students.

From the attention to these deficiencies, it is imperative that PE adopt flexible and adaptive approaches in microcurricular planning that adjust to the diversity of motor and cognitive needs of students with laterality disorders. These should be presented as variations in the design of the tasks, the use of different materials or the modification of rules.

In this way, the need to effectively support the development of laterality from the educational context, specifically from PE, is supported. Therefore, the objective of this research is proposed to comprehensively analyze laterality in PE students, based on of their

needs and perceptions, to design inclusive recreational activities that address laterality disorders.

A mixed approach is adopted for the development of the study, proposed by Rodríguez and Ledesma (2023) that combines quantitative data methods and Heidegger's interpretive method, to address the information based on the collection and analysis of statistical data, to examine the phenomena and establish a relationship between these methods. Among other components included in the research, the content validity index stands out (Hernández, 2002) through which the degree of agreements is assessed. The technique model for observation was also taken from Vásconez and Aldas (2023).

MATERIALS AND METHODS

Population and study sample:

The study considered teachers and students belonging to eight private educational institutions in the city of Quito. The first was of 33 teachers of the PE subject, in which 14 were selected, through non-probabilistic sampling for convenience, due to their degree of availability for the collection of information and teaching experience in the tenth year of Basic General Education, they also signed an informed consent.

The second was made up of 688 tenth-year students of Higher Basic General Education, who were subjected to an assessment of laterality disorder, the Harris test was used. Through this test, it was identified that 40 students had levels of laterality disorder according to their dominance of the hand, foot, eye and ear, who were considered as a sample to administer the survey.

Consideration of the presence of the laterality disorder was carried out using the observed criterion of 26 tests; where "D" is equivalent to performing the 10 tests with the right hand or foot, "I" if he performed the 10 tests with the left hand or foot, "d" could perform 7, 8, or 9 tests done with the hand or foot right, "i" did 7, 8, or 9 tests done with the left hand or foot and "x" is all other cases.

Table 1. *Harris test results level of laterality in students*

Level	Description	Male		Female		Total
		Fr	%	Fr	%	
DDDD	Complete right-handed	160	23.26%	172	24.94%	332
IIII	Complete left-handed	59	8.57%	55	8.00%	114
DIDI	Cross laterality	71	10.32%	51	7.41%	122
dDDD .	Unsecured right-handed	32	4.65%	27	3.92%	59
iIII .	Unsupported left-handed	eleven	1.60%	10	1.45%	twenty-one
ddDd .	Poorly asserted laterality	9	1.31%	7	1.02%	16**
ddDD .	Poorly asserted laterality	5	0.73%	6	0.87%	eleven**
ddDd .	Poorly asserted laterality	6	0.87%	7	1.02%	13**
Total		353	51.21%	335	48.79%	688*

Note: *The total population is 688 students **40 students register incorrectly stated laterality; (20 males, 20 females)

In Table 1, the results of the Harris test were analyzed, which revealed significant patterns in the preference for laterality among students. A prevalence of complete right- and left-handed people was observed, representing 48.20% of the sample. In addition, a smaller proportion of cases of crossed laterality, unsupported right-handedness, unsupported left-handedness and poorly supported laterality were identified, each with its respective representation in the table.

The table highlighted the sample group of 40 students with poorly affirmed laterality, 20 males and 20 females respectively, which represents 5.81% of the entire population of 688 students.

Research techniques and instruments:

To collect the information, two techniques were applied: the survey and the interview, the first was applied to the 40 students with poorly stated laterality and the second to the teachers, it was carried out between the months of August and October 2023. The instruments were validated by the expert judgment method in which three university

academic experts with experience in scientific publications in the area of PE inclusion were selected.

A questionnaire consisting of 10 items was applied with a Likert scale where 1 is equivalent to "never", 2 to "almost never", 3 "sometimes", 4 "almost always" and 5 "always", whose function was to obtain students' perception of laterality, experiences in inclusive recreational activities, and preferences for inclusive activities.

Semi-structured interview was applied and its instrument was a script of seven questions, designed to collect all the information necessary to cover the objective of this research, which were distributed in four areas: teaching experience, experience in the design of inclusive recreational activities, adaptations and modifications and impact and evaluation.

Table 2. *Question script*

Ambit	Item
Teaching experience	Could you briefly describe your experience as a Physical Education teacher and your involvement with teaching students with laterality disorder?
Experience in the Design of Inclusive Recreational Activities	Could you provide specific examples of recreational activities that you have designed to address handedness disorder in your students?
Adaptations and Modifications	What types of adaptations or modifications have you implemented in recreational activities to ensure the participation of students with laterality disorder?
	How do you address potential barriers or challenges that might arise when integrating these students into recreational activities?
Impact and Evaluation	How do you measure the impact of inclusive recreational activities on the development and participation of students with laterality disorder?
	Could you share examples of improvements seen in students, whether in terms of motor skills and learning?
	Are there any important aspects we haven't covered that you would like to add about your experience in this field?

Once the interviews were transcribed, Heidegger's interpretive method was applied to deeply understand the experience of the 14 teachers, from the interpretation and reflective analysis of the researchers, which allowed to explore their perceptions, which allowed to

obtain three dimensions that reveal hidden meanings, with which new knowledge emerged that helped improve teaching practice.

Analysis of data:

The data collected from the surveys were processed in Excel, the SPSS-IMB 23 software was used for the statistical analysis of the measures of central tendency and dispersion for the analysis of the teacher interviews. This approach allowed the collection of varied and complementary data that enabled a deep understanding of the experiences, perceptions and practices related to laterality disorders in the educational field. The convergence of these techniques facilitated the corroboration of the findings, which provided a holistic view of the key aspects that influence the approach to laterality disorders in the educational context.

RESULTS AND DISCUSSION

The results of the survey are processed and tabulated using the statistical software SPSS-IBM 23, from which the frequency tables are constructed based on the three dimensions suggested by the instrument: i) Perceptions of laterality, ii) Experience in inclusive recreational activities, and iii) Preferences for recreational activities. Consequently, the measures of central tendency and dispersion for grouped data are estimated, and the respective analysis is carried out. The results are presented:

A brief verification of the profile of the students is carried out, the predominant age is 15 years, with 52.5% equivalent to 21 of them; the majority female, with 52.5%.

Table 3. *Survey results - Frequency table of the Perception of Laterality dimension*

Interval	Xi	Fi	Fi%
0 – 2.9 (Never and almost never)	1.5	1	2.5%
3.0 – 3.9 (Sometimes)	3.5	37	92.5%
4.0 – 5.0 (Almost always and Always)	4.5	2	5.0%
Total		40	100.0%

Note. *Descriptive analysis of mean values (Xi); response frequency (Fi)*

In table 3, which corresponds to the dimension of the perception of laterality applied to the students, it is observed that 2.5% are located in the rating range between 0 to 2.9 (Never and Almost never), 92, 5% are concentrated in the interval between 3.00 and 3.9 (Sometimes), and 5.0% are located in the range of 4.00 to 5.00 (Almost always and Always) respectively; on the other hand, the average perception is indicated, which is 3.5, that is, a tendency towards "Sometimes" (score 3 on the scale of 1 to 5).

Table 4. *Survey results-Frequency table of the dimension Experience in inclusive recreational activities*

Interval	Xi	Fi	Fi%
0 – 2.9 (Never and almost never)	1.5	7	17.5%
3.0 – 3.9 (Sometimes)	3.5	11	27.5%
4.0 – 5.0 (Almost always and Always)	4.5	22	55.0%
Total		**40**	**100.0%**

Note. *Descriptive analysis of mean values (Xi); response frequency (Fi)*

Table 4 presents the frequency distribution for the dimension of experience in inclusive recreational activities, where 17.5% of the cases are concentrated in the assessment between 0 to 2.9 (Never and Almost never), the 27.5%, in the range of 3.00 to 3.9 (Sometimes), and significantly 55%, focus on the range of 4.00 to 5.00 (Almost always and Always), therefore, the participation of 55% is manifested in always and almost always and they are involved in the experiences of inclusive recreational activities, the estimated mean is 3.70.

Table 5. *Survey results Recreational Activities Preferences Dimension*

Interval	Xi	Fi	Fi%
0 - 2.9 (Never and Almost never)	1.5	4	10.0%
3 - 3.9 achieves	3.5	4	10.0%

4 - 4.9 (Always and Almost always)	4.5	32	80.0%
TOTAL		40	100.0%

Note. *Descriptive analysis of mean values (Xi); response frequency (Fi).*

Table 5 shows the frequency of the dimension of preferences for recreational activities, which in the rating range between 0 to 2.9 (Never and Almost never) gives a participation of 10%, in the range of 3 .0 to 3.9 reaches the value of 10%, and with a considerable participation of 80% it is in the rating range between 4.0 to 5.0 (Always and Almost always); on the other hand, the average preference for recreational activities is 4.1, which indicates a tendency towards "Always" and "Almost Always" (scores 4 and 5 on the scale of 1 to 5).

In the results of the interview, it must be considered that three weeks before applying them, the intervention proposal is socialized and shared with the PE teachers. The results are aimed at deepening the understanding of the experiences of the 14 teachers and focus on teaching students with laterality disorder.

The analysis of the interview results is based on Heidegger's interpretive method, so four key dimensions are extracted that allow a thorough understanding of the experiences and approaches adopted for students with laterality disorder.

The first dimension focuses on teaching experience and awareness of laterality, which reflects a change in focus towards inclusion and the comprehensive development of students. This transformation involves a curricular adaptation to specifically address the needs of students with laterality disorder.

The second dimension reveals the creation of inclusive recreational activities that transcend motor skills, which incorporate cognitive and emotional aspects and are based on cooperative learning, promote student autonomy and adapt specific strategies for the progressive exploration of laterality.

The third-dimension highlights adaptations and modifications in recreational activities to guarantee the participation of students with laterality disorder, especially in the area of PE. This leads to reducing individual differences and guiding students towards higher levels of competence and autonomy in the practice of physical activity.

Finally, the fourth dimension highlights the impact and evaluation of inclusive activities, improvements in motor skills, positive interactions between students and the promotion of social values.

These dimensions reveal a significant change in teaching practice, they focus on inclusion and the specific addressing of the needs of students with laterality disorder, which is reflected in the creation of adaptive strategies and activities and in the evaluation focused on individual progress.

Table 6. *Results of teacher interviews*

N.	Dimensions	Description	Methodological approach	Impact and Evaluation
1	Teaching Experience and Laterality Awareness	Teachers address laterality disorder, adapting teaching, prioritizing the development of laterality.	Focus on inclusion, motor development and self-confidence.	Improvement in student-centered pedagogical approach, comprehensive development and attention to specific needs.
2	Inclusive Recreational Activities	Creation of activities that address laterality, combining motor, cognitive and emotional components.	Cooperative learning and student autonomy.	Progressive development of laterality, curricular adaptation and inclusive approach.
3	Adaptations and Modifications in Activities	Modifications for inclusion, ensuring participation of students with laterality disorder.	Emphasis on Physical Education, adaptation of objectives and rules.	Reduce individual differences, guide towards greater competence and autonomy in physical activities.
4	Impact and Evaluation of Inclusive Activities	Improved motor skills, positive interaction between peers and promoted social values.	Use of observation sheets and checklists.	Improvement of skills, positive interaction and evaluation focused on the learning process.

Together, these results suggest a significant change in teaching practice towards inclusive and personalized teaching, focused on comprehensive development, with a clear focus on addressing the specific needs of students with laterality disorder. The interpretive method

allows hidden meanings to be revealed, understanding is enriched, which generates new knowledge that can contribute significantly to the improvement of teaching practice.

On the other hand, the interviews with teachers emphasize a change in their approach towards the inclusion and comprehensive development of students with laterality disorder. The proposed strategy focuses on curricular adaptation, cooperative learning and evaluation of the learning process, recognizing the diversity of needs presented by students who have not yet defined their laterality.

Integrating this data is crucial to understanding student needs and preferences, as well as understanding the approaches taken by teachers. This acquires particular relevance in the design of inclusive recreational activities that address laterality disorders, prioritizing comprehensive development and an inclusive approach in the educational environment, especially for those students who are still in the process of defining their laterality.

Intervention proposal:

The integration of the data obtained through the Harris test highlights the need to design educational, recreational and inclusive activities that address laterality disorders, especially in those students in the process of affirming their laterality. These results underline the urgency of a flexible approach to address the diversity of needs in the educational context; Suntaxi and Quintanilla (2021) add the importance of adapting a set of exercises for students with laterality disorders who face obstacles in coordination, which affects their performance in physical and recreational activities.

It is essential to address these deficiencies to provide PE that addresses the specific needs of these students. In this sense, particular attention is required in the design of strategies and activities that promote the development of laterality in a comprehensive manner and adaptable to individual capabilities.

The intervention proposal focuses on adapted recreational activities, designed to encourage the development of laterality and promote inclusion by being adaptable and flexible,

allowing the participation of all students, regardless of their motor skills or lateral preferences.

Methodologically, the activities are based on the motor challenges posed in cooperative learning (Garví et al., 2022), where students get involved to solve motor problems, look for possible solutions and focus on autonomous learning, in which the possibility of being a generator of their own learning.

The activities are supported by a carefully planned curricular adaptation, which addresses the specific needs of students in relation to laterality disorder; in this way, the inclusive approach in PE is evident, in addition to the adaptations and flexibility in the activities, the opportunity to actively participate is provided, fine and gross motor skills are strengthened, and confidence and autonomy in learning are improved.

Table 7. *Recreational Activities to reaffirm Laterality*

Recreational activity	**Development of laterality**	**Inclusive Resource**
obstacle courses	Obstacle races develop motor coordination and laterality (Vásconez and Aldas , 2023).	Design alternative routes in the races to allow variations in the execution of obstacles, considering varied levels of difficulty.
Ball games	Ball games require coordination and use of both sides of the body (Pita and Briones, 2023).	Use balls of different sizes or textures to allow a more comfortable grip and vary the difficulty in playing the games.
Dance	Dancing involves lateral movements that stimulate spatial awareness (Fals et al., 2022).	Offer adapted movement alternatives, allowing students to follow the rhythm of the music according to their ability and lateral preference.
Balance circuits	The circuits challenge children to improve body control and coordination by enriching laterality (Suntaxi and Quintanilla, 2021).	Provide additional supports or stable surfaces to facilitate balance, adjusting difficulty according to individual abilities.
Painting with both hands	Painting with both hands strengthens laterality (Murakami , 2021).	Provide different painting tools, such as brushes of various sizes, sponges, or fingers, allowing students to choose what they are most comfortable with.
Jumping games	Jumping involves using different sides of the body, favoring laterality (Trigueros et al., 2022) .	Adapt the distance or height of jumps according to individual abilities, providing options that allow each student to participate safely and comfortably.

Throwing Games	Throwing activities improve accuracy and lateral dominance (Arufe et al., 2021) .	Use different objects to throw, adjusting their weight or size so that they are manageable for each student.

These activities promote inclusion because they can be applied in different classes, adapted to any objective, instructions or rules, which guarantees an inclusive environment, with greater participation options for students according to their abilities. In addition, they improve fine and gross motor skills, evidenced by the execution of coordination activities, balance, manual skills and specific movements.

It should be emphasized that feedback on these activities is a very important element to strengthen learning and adjust strategies that optimize individual results; which guides evaluations that improve confidence.

The data collected reflects a detailed picture of perceptions, patterns of laterality, and educational approaches regarding laterality disorders in the student context. The initial survey reveals a preeminence of 15-year-old students, with a slight majority of women. The results suggest a moderate inclination towards participation in inclusive recreational activities, which show a clear preference for participation "almost always." It is essential to highlight that a significant group of students, despite their age, have not yet defined their laterality, which challenges the traditional conception of a clearly defined laterality in the majority.

The results obtained from the Harris test indicate a strong preference for defined laterality, especially right-handedness in the majority of students, which highlights the importance of understanding and considering these patterns when developing educational activities, especially in the field of PE. The interviews with teachers reflect a change in focus towards the inclusion and comprehensive development of students with laterality disorder; a strategy based on Heidegger's interpretive method is proposed (Murakami, 2021; Trigueros et al., 2022).

The findings of these interviews emphasize the focus on curricular adaptation and the creation of inclusive recreational activities that transcend purely motor activities. This

coincides with what was investigated by Cuevas et al. (2023), who express that the strategies are based on cooperative learning and the adaptation of activities to facilitate the progressive exploration of laterality in those students who have not yet defined it.

CONCLUSIONS

The research addressed the importance of considering laterality in the design of inclusive recreational activities; it was also evident that curricular adaptation and personalization were key to addressing the specific needs of students. The dimensions reflected teachers' awareness and commitment towards the implementation of inclusive recreational activities to treat laterality disorders, which demonstrated the solid theoretical basis for making informed pedagogical decisions.

The analysis focused on the laterality of students in PE underlined a marked preference for defined laterality, especially right-handedness. The need for inclusive strategies in recreational activities to address laterality disorders was highlighted, focusing on the diversity of needs, particularly in students who have not yet defined it.

From this study, the doors are opened for future research related to the understanding of inclusive educational practices, which is why they should not be cross-sectional but rather longitudinal to continue the progress of students over time.

REFERENCES

Arufe Giráldez, V., Pena García, A., & Navarro Patón, R. (2021). Efectos de los programas de Educación Física en el desarrollo motriz, cognitivo, social, emocional y la salud de niños de 0 a 6 años. Una revisión sistemática. *Sportis. Scientific Journal of School Sport, Physical Education and Psychomotricity*, *7*(3), 448-480. Https://doi.org/10.17979/sportis.2021.7.3.8661

Cuevas-López, A. A., Vergara Torres, A. P., Mendoza-Baldenebro, R. E., & Ceballos-Gurrola, O. (2023). Propiedades psicométricas de la Escala de Planificación

Contextualizada en la Educación Física. *Cuadernos de Psicología del Deporte*, *23*(1), 219-233. Https://doi.org/10.6018/cpd.513791

Fals Martinez, J. A., Noa Cuadro, H., & Sánchez Córdova, B. (2022). Desarrollo de habilidades técnicas por medio de la transferencia bilateral en futbolistas de categorías escolares. *Lecturas: Educación Física y Deportes*, *27*(288), 176-188. Https://doi.org/10.46642/efd.v27i288.3414

Garví Medrano, P., García López, L., & Fernández Río, J. (2022). *Aprendizaje Cooperativo Materiales curriculares para Educación Secundaria en Educación Física*. Ediciones de la Universidad de Castilla La Mancha. https://www.researchgate.net/profile/Javier-Fernandez-Rio /publication/363889842_Aprendizaje_cooperativo_Materiales_curriculares_para_Educacion_Secundaria_en_Educacion_Fisica /links/633f020b2752e45ef699e231/Aprendizaje-cooperativo-Materiales-curriculares-para -Educacion-Secundaria-en-Educacion-Fisica.pdf

Harris, A. J. (1961). M*anuel d'application des test de latéralité*. Ed. Du Centre de psychologie appliquée.

Hernández Nieto, R. (2002). *Contributions to Statistical Analysis*. Universidad de Los Andes.

Ledesma Albornoz, Á. (2021). El método hermenéutico-fenomenológico de Martin Heidegger y la posibilidad de una investigación filosófica independiente. *Studia Heideggeriana*, *10*, 245-262. Https://doi.org/10.46605/sh.vol10.2021.115

Medina Amate, I. M. (2020). Evaluación e intervención ante un caso de lateralidad cruzada. Caso único. *MLS Psychology Research*, *3*(1), 99-138. Https://doi.org/10.33000/mlspr.v3i1.453

Ministerio de Educación del Ecuador. (2017). *Currículo de EGB y BGU Educación Física* (Vol. 1). Ministerio de Educación. Https://educacion.gob.ec/wp-content/uploads/downloads/2016 /08/EF-completo.pdf

Murakami Hernández, Y. (2021). *Diviértete mientras aprendes a pintar*. Solar servicios editoriales.

Pita Bumbila, J., & Briones Moreira, A. (2023). Actividades con balón para mejorar la lateralidad de los estudiantes de 8 a 10 años. *Polo del Conocimiento*, *8*(1), 567-586.

Posso Pacheco, R. J., & Barba Miranda, L. C. (2023). La Influencia de los Factores Emocionales en la Educación Física Significativa. *MENTOR revista de investigación educativa y deportiva*, *2*(5), 179-187. Https://doi.org/10.56200/mried.v2i5.5985

Posso Pacheco, R. J., Paz Viteri, B. S., Figueredo Frutos, L. L., Muñoz Aguilar, I. D. L. M., Ortiz Bravo, N. A., Cóndor Chicaiza, J. D. R., Cóndor Chicaiza, M. G., & Marcillo Ñacato, J. C. (2022). *Necesidades educativas especiales en el contexto de la educación física* (Primera edición). Universidad Pedagógica Experimental Libertador, Instituto Pedagógico de Barquisimeto «Luis Beltrán Prieto Figueroa». Https://doi.org/10.46498/upelipb.lib.0015

Posso-Pacheco, R. J., Barba-Miranda, L. C., Rodríguez-Torres, Á. F., Núñez-Sotomayor, L. F. X., Ávila-Quinga, C. E., & Rendón-Morales, P. A. (2020). Modelo de aprendizaje microcurricular activo: Una guía de planificación áulica para Educación Física. *Revista Electrónica Educare*, *24*(3), 1-18. Https://doi.org/10.15359/ree.24-3.14

Rodríguez Paredes, S. A., & Ledesma Pérez, F. E. (2023). Explorando la actitud docente en el e-learning: Un enfoque cualitativo desde la perspectiva de docentes y estudiantes. *Edutec. Revista Electrónica de Tecnología Educativa*, *84*, 70-88. Https://doi.org/10.21556/edutec.2023.84.2625

Rosero Jama, S. A. (2022). El desarrollo de la lateralidad en el aprendizaje de los niños de edad inicial. *REINCISOL: Revista de Investigación Científica y Social*, *1*(2), 1-19. Https://doi.org/10.5281/ZENODO.6814709

Sánchez Rodríguez, L. M., & Briones Moreira, Á. F. (2022). Desarrollo de la lateralidad en niños de preparatoria. *Revista Cognosis*, *7*(EE-I), 127-144. Https://doi.org/10.33936/cognosis.v7iee-I.4761

Suntaxi Naula, C. H., & Quintanilla Ayala, L. X. (2021). Potenciación de las habilidades motrices básicas en fútbol sub-8 a través de la coordinación motriz. *Lecturas: Educación Física y Deportes*, *26*(280), 101-114. Https://doi.org/10.46642/efd.v26i280.3160

Trigueros Cervantes, C., Doña, A. M., & García, E. R. (2022). Picasso por un día. Análisis de la motricidad infantil desde el dibujo de infantes chilenos de Educación Infantil. *Retos*, *45*, 233-244. Https://doi.org/10.47197/retos.v45i0.91677

Vásconez Tanquino, E. R., & Aldas Arcos, H. G. (2023). Actividades lúdicas para mejorar la coordinación y lateralidad en escolares de básica superior. *Mqrinvestigar*, *7*(1), 3180-3204. Https://doi.org/10.56048/MQR20225.7.1.2023.3180-3204

Vejar Quintana, Z., Escalona Linares, J., & Bracho Pérez, J. (2023). Educación inclusiva y su participación en niños con dislexia. *Infometric@ - Serie Sociales y Humanas*, *6*(1), 1-19.

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