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Original Article

Ludic activities to develop basic motor skills in Physical Education Students

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ABSTRACT

Introduction: The contents in this article on ludic activities enabled the optimization of basic motors skills in Physical Education classes, including varied activities that will help enhance motor movements of the subjects in the study. **Aim**: to validate a system of ludic activities for optimizing the basic motor movements of 6th graders at the Alemán Humboldt Guayaquil school. **Materials and methods:** This research consisted in a descriptive-correlational study of two independent groups (Control group: ten students, and experimental group: ten students). The control group was under the traditional system of participation in ludic activities, whereas the experimental group was given a new variant of ludic activities. Previously, a theoretical validation of the intervention proposal was made by 15 national and international specialists, who assessed four indicators (Validity "V", Integrability "I", Accessibility "A", Variety "Va"). **Results:** Upon the analysis of every parameter, the W Kendall test revealed a level of concordance among high-level specialists (w=0.376), with significant differences of the individual scoring by parameter analyzed. The asymptotic significance level (p=0.001<0.05), showed a high level of concordance among specialists, in relation

to the qualities of the ludic activity system. **Conclusions:** The ludic activity system suggested for the development of basic motor skills is pertinent, and should be applied in other Physical Education classes.

Keywords: ludic activities, basic motor skills, game, system.

INTRODUCTION

One of the main goals of education is the formation of individuals who are capable of coping with the unforeseen developments of the environment. Among the first social groups, education was conceived as a practical process that did not discriminated learning and mythological or religious rites. "Motor skill development has never been detached from human education; it has always been associated with the model of man and the notion of body" (Gruppe, 1976; Fermoso, 1982). For that reason, the primitive educational systems conferred the development of motor skills a relevant role, basically, as a stimulus of useful and indispensable learning for collective survival and development. From the onset of civilization, ludic activities have brought along a portfolio of practices full of mystic, religious, labor, and fighting connotations deemed necessary to live in society.

Regarding Physical Education, the new or active form of schooling helped widen its ends and functions, as it contributed with new study trends, application settings, and practices with multivalent meaning and sense (Camerino and Castañer, 2001). In sight of that assertion the methodological changes could be assumed as activism fostered from the new school, which would not have been possible thanks to the high relevance given to experience; that is, mostly practical learning and teaching situations.

Today, academic research is increasingly focused on the development of basic motor skills in school children, due to the significance given to this stage of life as the ideal moment to acquire and develop basic motor skills.

Basic motor skills are present in every individual, though the time and rhythm of acquisition is different in each subject. Moreover, the development of personal identity as the basis for adulthood is characterized by a series of body, hormonal, and physical changes known as "the adolescent's crisis".

Cagigal (1981) noted that despite the school relevance, such an essential content as sports must not deviate from its educational roots, in spite of exaggerated technicalities derived from specialization and professionalization that comes from a sports culture that depends on the show business. Accordingly, Cagigal claimed an integrated education of movement, upon the identification of this educational path as part of a sports pedagogy. In other words, Physical Education that feeds from

spontaneous, conscious, and significant motor functions (with sense and functionality), which apart from assuming physical and motor development and learning, also considers intellectual and ethical-moral development and learning.

In recent years, there has been a tendency to workout, especially by adult people; however, the opposite is observed in children and teenagers, who are being absorbed by technology, and naturally, the development of their motor skills is slowed down. Additionally, the years of pandemic that limit this condition, with an apparent lack of opportunities for practice or appropriate instruction. Consequently, some children and adolescents have not acquired proper perceptive and motor information necessary to perform the other skills at the highest accuracy. Motor skills are thought of as the base of every movement, and those that will help master more complex and specialized movements in the future. The basic motor skills are within that level.

In the area of motor skills, several authors have mentioned the main characteristics of basic motor skills Latorres (2016), Paredes (2016), Flores (2016). Sánchez Bañuelos (1990), Batalla Flores, A. (2018); López Juan María (2016). Palmar, Husain (2018). Ramos, Pilaret *al.,* (2016), who express and justify activities as a setting that provides general and polyvalent learning. Its learning takes place between six and twelve years of age, along with adaptative behaviors whose end is not performance or top efficacy, but the development of a suitable motor base. They require a lower demand of physical qualities, and perceptive-motor and cognitive-motor aspects take place. It is based on the principle of transference from the elementary movements, also consider the significance of the four basic motor skills acquired by subjects, namely movements, jumps, turns, and handling.

Then they refer to the most relevant studies in this area, as to the assessment of motor skills. Though, as stated by Fernández, Gardoqui, and Sánchez Bañuelos (2017), there is a void in term of reports nationally and internationally in relation to motor skill assessment. The study of Rosa, J. Rodríguez, L. P., and Márquez, S. (2016) consisted in an assessment of motor performance in 1 083 subjects (588 boys and 495 girls), between 6 and 12. The Lincoln-Ozeretski motor test modified by Sloan (1955a, b) was used to measure the motor performance. The results demonstrated that age is more associated with the development of motor performance than sex.

A paper published by the University of San Jose, Costa Rica, by Coto, (2017), entitled The Ludic-Creative Approach, aimed to call the attention on daily life and its importance as a tool for the educational process, which refers to workshop courses entitled: Playing will do you good in improving basic motor skills and

collective educational processes. It was concluded that the ludic approach plays a key role in education, as it permits to teach and learn through practice and fun, a series of activities that include races, jumping, movements, turns, handling, and ball domain. This article contributes to that research through reference made to the ludic approach, which must be present when appealing to children's attention in favor of these activities.

Motor skills are the basic sense-motor structure that appeared from motor schemes, and are a contribution to the other motor actions developed by individuals throughout their lives. Therefore, motor skills are understood as behaviors that evolve from basic motor skills (genetic), developed through maturation, practice, and experience. Other authors define motor skills as the visible manifestation of the motor act (movement) interacting with the perceptive-physical and socio-affective capacities of the individual responsible for this motor action (Casteñar, M. and Camerino, 1991). Thus, motor skills and the other capacities of individuals have a mutual influence and evolve simultaneously, defining the motor functions of every person. Quite a few authors have classified motor skills.

Among the ludic activities, games play a critical role, as they generate an innate learning environment, which can be used as a communication form, sharing, and conceptualizing knowledge, and finally to promote social, emotional, and cognitive development in individuals. Through gaming, a necessary constructivist and researching attitude is developed, both in teachers who look to generate knowledge adapted to the students' learning styles, and the students who try to learn in the most pleasant way.

Considering that within the ludic activities, games are an important part of learning, which provides new knowledge that strengthens the intellect, and permits easy interaction with the people who surround them, making communication more fluent.

According to Hernández & Acosta. (2011), ludic is the "voluntary practice done with a feeling of joy and satisfaction. As second nature, humans feel the need of playing, having moments of sound joy, free from the everyday concerns" (p.26). These physical and sports activities, also recreational, have a pedagogic character, and are oriented to improving the basic motor skills of practitioners, offering the possibility of using leisure as a way of learning and personal joy.

According to Martín, Delia; Soto (2018), game as a ludic activity offers a series of benefits at the affective level. This tool motivates and favors creativity. It fosters the participation of every one, and contributes to the development of people's skills and abilities (p.23). The functions of game as ludic learning contribute to a more

pleasant teaching process, arousing the children's interest toward sports practice; iit leads to an extended development of motor skills, such as running, jumping, rolling, turning, moving, throwing, catching, etc. It can also create exciting moments in which children feel comfortable, increasing the analysis capacity and understanding in children.

Games Huizinga, J. (2005). "From another perspective, sports and recreation do not necessarily come from sports learning, but they make sense in themselves, and favor body language, socialization, and a creative joy of leisure" (p.61). Parlebas (2001) insisted that "well directed and organized games are an infinite source that can help us make motor proposals, though the sport is the main goal". (p.11)

Games have an intrinsic end, and liberates from conflicts, it overlooks every problem or solves them. Gaming on the body and the sense. Discovering new sensations. Coordinating body movements globally and dynamically. Ludic activities applied through games have a variety of functions that enable the making of the most suitable and coordinating movements; the gestures of the action are made with elegance and less rigidity; the teaching process of class activities is more interesting, awakening the interest and motivation of participants. Learning is faster and more fun, it creates spaces where students feel comfortable and can express themselves freely.

The development of basic skills and abilities through basic movements entail the domain of the body itself, and the handling of objects, such as basic movements, jumping, turning, throwing, catching. They are more effective when done in the area of ludic activities, allowing for the consolidation of competitive ludic activities, and therefore, increases the complexity of movements, particularly the initiation of specific skills and tasks with a ludic-sports character, and refer to sports or expressive activities. The same occurs to specific skills in every sports discipline, since gaming enhances techniques and gestures, leading to better acquisition, mastery, and development of basic motor skills in children.

Specific skills for every sport and technique to improve gestures are initiated. This research is within the fourth level, its purpose is to evaluate if through sports practice of tennis, the acquisition, mastery, and development of motor skills in 6^{th} and 7^{th} graders at the Alemán Humboldt Guayaquil school can be enhanced.

The aim of this research is to validate a system of ludic activities for optimizing the basic motor movements of 6^{th}-7^{th} grade students at the Alemán Humboldt Guayaquil school.

MATERIALS AND METHODS

This study relied on a descriptive-correlational method to establish the relation between ludic activities and basic sixth grade student skills at the Aleman Humboldt Guayaquil school, with a sample consisting of 20 students. An experimental group made of ten students received the new system of ludic activities, and a control group consisting of ten students continued using the traditional activities. The study was intended to validate a system of ludic activities to optimize the basic motor movements of the students in the research.

The contents included a change in the design of a ludic activity system to enhance basic motor skills, classifying the games according to the activities performed, such as skills using the ball, dynamic balance, short runs, jumps, and turns. The study also applied a modified skills test of basic motor skills.

A theoretical validation was required to develop the system of ludic activities of students, by consulting 15 national and international specialists (over 10-year experience), whose main inclusion assumptions were associated with their experience in developing ludic and motor activities. The parameters included in the analysis were the following:

1. Validity (V): The quality of being valid, capable of meeting the purpose of this study.
2. Feasibility (F): The quality of appropriate implementation that produces results.
3. Accessibility (A): The quality of accessibility, which is related to proper contents delivered to the number of students and their ages.
4. Variety (Va): The content of ludic activities designed must be varied, producing timely and quality activity that encourages students to repeat the same actions.

The four parameters in the theoretical analysis will be evaluated through the five-level Likert scale, described below:

- Very Low (1 point).
- Low (2 points).
- Mid (3 points).
- High (4 points).
- Very High (5 points).

Measurement: test of basic motor skills (Table 1).

Table 1. Test of basic motor skills.

DESCRIPTION	OBJECTIVE	METHODOLOGY AND MATERIALS
Test No. 1. Walking on a straight line as fast as possible	To measure dynamic balance	Sports area, cones, drawn lines. Implementation: Initially, the child will be set in the starting position at the lower side of the line; the child begins to move using the heel sole-tip of the feet on the line in both directions. Dist. 20 m
Test No. 2. Walking on a straight line as fast as possible	To evaluate the motor dynamic coordination and the orientation capacity.	Sports area, cones, whistle. Implementation: Initially, the child will be set in the starting position at the lower side of the line; the child begins to move using the metatarsus, zigzagging on the line.
Test No. 3. Lateral/ventral position crawling	To make the whole body move in coordination.	Materials. - A mat, rope, poles. Implementation: The child must go under a rope hanging from 30 cm high poles placed at 1 m from each other, without touching it.
Test No. 4. Jumping over 30 cm	To measure dynamic coordination and motor coordination.	Sports area, rope, whistle. Implementation: The child must go under the rope hanging from 30 cm high poles placed at 1 m from each other, without touching the rope.
Test No. 5. Throwing	To measure the precision of the upper limbs by generating a strength over an element so it reaches a given point.	Sports area, plastic container, tennis ball. Implementation: The child throws 10 tennis balls into a plastic container using the preferred hand, from 2 m. The container should be 60cm diameter x 1 m high.
Test No. 6. Balancing	To measure static balance	Sports area, table, bottle, glass, containers with water. Implementation: The child should fill the gall with water, by collecting it from a container and carrying it using the preferred hand, then transport it for 5 m and pour all the water into the bottle avoiding water spillages. The exercise ends when more than 50% of the bottle is filled.
Test No. 7. Catching	To measure vision-motor coordination	Sports area, plastic container, paper ball. Implementation: The child should catch 10 paper balls thrown by another person from a 2 m distance. The balls caught with the hands are placed in a container near the child.
Test No. 8. Ball skills	To measure motor coordination	Sports area, balls. Implementation: The child should bounce the ball onsite for 1 minute, then throw it upward and catch it, the move on a 20 m line bouncing it.

Practical contribution: The study suggests a system of ludic activities for optimizing the basic motor skills of 6^{th}-7^{th} grade students at the Alemán Humboldt Guayaquil school.

RESULTS AND DISCUSSION

Table 2. Test of basic skills for children participating in the research.

Pre-test: Control group.....Post-test: Control group

Test	G	%	A	%	B	%	Tot.	Test	G	%	A	%	B	%	Total
Test No. 1 Walking on a straight line as fast as possible	**0**	**0**	**4**	**20**	**6**	**30**	**10**	**Test No. 1. Walking on a straight line as fast as possible**	**1**	**5**	**7**	**35**	**2**	**10**	**10**
Test No. 3. Ventral decubitus crawling	**0**	**0**	**5**	**25**	**5**	**25**	**10**	**Test No. 3. Ventral decubitus crawling**	**2**	**10**	**6**	**30**	**2**	**10**	**10**

Test No. 4. Jumping over 30 cm	**0**	**0**	**6**	**30**	**4**	**20**	**10**	**Test No. 4. Jumping over 30 cm**	**2**	**10**	**7**	**35**	**1**	**5**	**10**
Test No. 5. Throwing a baseball as far as possible	**0**	**0**	**4**	**20**	**6**	**30**	**10**	**Test No. 5. Throwing a baseball as far as possible**	**4**	**20**	**5**	**25**	**1**	**5**	**10**
Test No. 8. Ball skills, throwing and catching	**0**	**0**	**5**	**25**	**5**	**25**	**10**	**Test No. 8. Ball skills, throwing and catching**	**2**	**10**	**6**	**30**	**2**	**10**	**10**

Source: The author
Made by: José Geovanny Boza Mendoza.

Table 3. Test of basic skills for children participating in the research.

Pre-test: Experimental group.....Post-test: Experimental group

Test	G	%	A	%	B	%	Tot.	Test	G	%	A	%	B	%	Total
Test No. 1 Walking on a straight line as fast as possible	**1**	**5**	**4**	**20**	**5**	**25**	**10**	**Test No. 1. Walking on a straight line as fast as possible**	**9**	**1**	**1**	**5**	**0**	**0**	**10**
Test No. 3. Ventral decubitus crawling	**0**	**0**	**4**	**20**	**6**	**30**	**10**	**Test No. 3. Ventral decubitus crawling**	**9**	**1**	**1**	**5**	**0**	**0**	**10**
Test No. 4. Jumping over 30 cm	**0**	**0**	**5**	**25**	**5**	**25**	**10**	**Test No. 4. Jumping over 30 cm**	**10**	**0**	**0**	**0**	**0**	**0**	**10**
Test No. 5. Throwing a baseball as far as possible	**2**	**10**	**4**	**20**	**4**	**20**	**10**	**Test No. 5. Throwing a baseball as far as possible**	**8**	**2**	**2**	**10**	**0**	**0**	**10**
Test No. 8. Ball skills, throwing and catching	**0**	**0**	**5**	**25**	**5**	**25**	**10**	**Test No. 8. Ball skills, throwing and catching**	**10**	**0**	**0**	**0**	**0**	**0**	**10**

Ludic activities to develop basic motor skills
Area: System of ludic activities to develop basic motor skills
Sub-level objective: To develop a system of ludic activities that permits development of basic motor skills of 6th-7th grade students at the Alemán Humboldt Guayaquil school.
Project: Ludic activities;
Date: Thursday, November 27th, 2021.
Unit: Ludic activities and basic motor skills.
Teacher's name:

Table 4. Ludic Activities to develop basic motor skills in elementary education students

Task –Situation Description.	Objectives	Learning objective	Methodological strategies	Construction of knowledge
The burning ball game	To improve object throwing (balls)	To measure dynamic motor coordination and vision-motor coordination to enhance balance, movements, crawling, climbing, and motor functionality, that help	**Anticipation:** -To observe informational videos about topics related to the skills suggested for the ludic activities.	Construction of knowledge -I go outside the classroom and walk freely in the school yard. -I walk using support on
Games of group turns on rows. This game is conducted by the	To improve coordination through turns			

teacher's voice commands: left, right, turn, total, etc.				
Moving in sacks game.	To improve movement speed and coordination	the exploration of the body t through the senses movements and positions for proper structuring of body scheme.	Group presentation about the information in the video and discussion with the teacher To develop ludic games related to the topics related to the ludic activities presented by the teacher. To apply this test of basic motor skills at the beginning of the application of ludic activities, and at the end of implementation.	different surfaces. -I walk, jump, climb, crawl on ventral cubitus position, walk and run on drawn lines, and on irregular trails with the support of my teacher. -I walk on different ramps safer under the guidance of my teacher. I dance and create dance moves.
Rolling the ball with the hands game	To improve object movement coordination (balls)			
Throwing the ball into the air and catch it before it hits the floor game	To improve object throwing (balls)			
Moving through arrows game	To improve movement speed and coordination			
Every team turn five times going back to the starting point after each turn game.	To improve coordination by turning			
Cone jumping game	To improve the strength of lower limbs			
Moderate movements (10 m) and total turning (10 m), and total turning (50 m) game	To improve movement speed and coordination			
Jumping the farthest without impulse game	To improve the strength of lower limbs			
Combined movement and jumping over two 15 m distance benches game.	To improve strength and movements, to improve object handling			
Who throws the ball farther game. The child throws the ball into the air and catches it, then the child throws the ball quickly, the distance is summed by teams	To improve object throwing (balls)			
The color dancing game. The children dance through a ribbon moves by the teacher.	To improve focus, attention, and rhythm			
The dancing game: Creating with the music, dancing along different music styles (pop, cumbia, classic, etc.)	To improve focus, attention, and rhythm			

Table 5 shows the results achieved in the theoretical validation made prior to the implementation of the system of ludic activities for the development of basic motor skills of 6th-7th grade students at the Alemán Humboldt Guayaquil school, in 2021 (Table 5).

Table 5. Results of the specialist validation of the proposal of ludic activities

No.	V	F	A	Va
1	**5**	**3**	**4**	**5**
2	**4**	**4**	**5**	**5**
3	**5**	**5**	**3**	**4**
4	**5**	**5**	**4**	**4**
5	**4**	**4**	**5**	**5**
6	**5**	**3**	**5**	**5**
7	**5**	**4**	**4**	**5**
8	**4**	**5**	**4**	**4**
9	**4**	**5**	**3**	**5**
10	**5**	**4**	**4**	**5**
11	**5**	**4**	**5**	**4**
12	**4**	**3**	**3**	**5**
13	**5**	**3**	**3**	**5**
14	**4**	**4**	**4**	**5**
15	**3**	**5**	**4**	**4**
Σ	**67**	**61**	**60**	**70**
X	4.47	4.07	4.00	4.67

In the four parameters used of the theoretical analysis of the intervention proposal, the highest score was Variety, with a mean of 4.67. The qualification was between High and Very High, so there was a consensus among the specialists that the systems of ludic activities are pertinent to develop motor skills through the Physical Education Classes.

The literature consulted evidenced the significance of using ludic activities to develop the basic motor skills, such as in the works of Marin, J. F. (2021); Abella, L. M. L., & Giraud, B. Y. J. (2021); Miranda-Yero, D. A., Rey-Benguría, C. F., & Jeffert-Duarte, B. (2021), who insisted on the potentialities of games to achieve these goals.

Moreover, the Validity parameter was 4.47 points, between High and Very High, with a high acceptance to meet the principle of Validity for the proposal. Accessibility of ludic activities according to the age of the subjects in the study reached 4.00 points, between the Mid and High levels, which led to adjustments of game design depending on the development and motivations of the subjects in the study. Feasibility reached 4.07 (High), which matches the applicability and correspondence of the games designed to the attributes of the Curricular Block of

Ludic Practices, such as game and gaming for this educational level (Petrou, O., & Henríquez, A. 2017; Sailema, Á., Sailema , M., Amores , P. D. R., Navas Franco, L. E., Víctor Amable, M. Q., & Romero Frómeta, E.,2017) (Table 6) and (Table 7).

Table 6. - W Kendall test

Ranges	
	Average range
VALIDITY OF LUDIC ACTIVITIES	2.73
PRACTICAL FEASIBILITY	1.57
AGE ACCESSIBLE	2.63
DIVERSITY	3.07

Table 7. Test statistics

N	**15**
W Kendall[a]	.376
Chi-square	16.901
gl	3
Asymptotic significance	.001

a. Kendall's concordance coefficient

Upon the analysis of every parameter, the W Kendall test (Table 7), the specialists found a High Level of concordance (w=0.376), with significant differences of the individual scoring by parameter analyzed. The asymptotic significance level (p=0.001<0.05), showed a high level of concordance in relation to the qualities of the ludic activity system.

The above demonstrates that the analyses performed by every specialist were satisfactory at the theoretical level, and can be useful as a methodological basis to implement the system proposal of ludic activities for the development of basic motor skills of 6^{th}-7^{th} grade students at the Alemán Humboldt Guayaquil school, in 2021.

CONCLUSIONS

The parameter Variety reached a mean of 4.67, the highest score, demonstrating the effectiveness of the system of ludic activities to develop motor skills through the Physical Education classes. The parameter Accessibility of ludic activities according to the age of the subjects in the study averaged 4.00 points, between the Mid and High levels; whereas Feasibility scored 4.07, a High Level, confirming the applicability and correspondence of the games designed according to the characteristics of the curricular block.

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