

## **BODY KINESTHETIC ACTIVITY IN BASIC LEVEL CHILDREN'S LEARNING**

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### **ABSTRACT**

Body kinesthetic activity in basic education is fundamental for the development of students learning. The teacher is key to carry out this action, stimulating it with a relevant, assertive and motivating communication, along with teaching and learning based on the exploration of body expression and training of sensorimotor activities. All this contributes to the cognitive development, to the development of skills that will allow students to solve problems. The method used for this research was of a qualitative nature, with documentary analysis, case studies where the results are focused on explanation, analysis and inference. The findings that emerged through the activities that were carried out have allowed us to highlight and contribute to the development of learning through body kinesthetic activity, along with the presentation of a program of physical and cognitive activities.

### **INTRODUCTION**

Education today is focusing on providing the students in the different grades of regular basic education with ample knowledge, varied information, pragmatic experience and, to some extent, to commercial experience as well. This gives the conditions for them to search for qualification, which in occasions classifies them as good or bad, intelligent or not intelligent and other terms like excellent, in process, outstanding, or at initial stages.

It is around this matter that we reinforce the importance of carrying out the corporal kinesthetic activity as a means for the development of the intellect of the students, thus, contributing in the improvement of attention, concentration and the acquisition of new knowledge.

Accordingly, Gardner (2014) defines the corporal kinesthetic development as the way of using corporal segments in diverse situations in a skillful and precise way, directed to the achievement of objectives which are expressed in the improvement of the intellect.

However, in many occasions, this practice stays at the conceptual level since the national curriculum, in its structure and explanations, does not link psychomotor and motor levels with the cognitive area. It neither refers to the benefits that the correct execution of body kinesthetic activities brings as a contribution in the development of cognition from a dichotomous and complementary perspective.

Del Carmen (2016) explains the need to work with the different types of human intellect based on the development of programs and activities that can improve the linguistic and kinesthetic level at preschool age. From this perspective, we state the following research problem: Does body kinesthetic activity develop children's learning in the basic level? The problem is based on the studies made by Gardner about the development of the kinesthetic corporal intelligence and its distinctive features.

The research seeks to make students, teachers and the educational community be aware of the fact that different intelligences can be developed in order to increase knowledge and, in this way, help society grow. That is why this study could be taken as a reference to show that body kinesthetic activity contributes directly to cognitive development, in the same way that Mathematics and Languages do.

As an example, we have the conclusions that were obtained through the evaluation tests developed in our country by the Office for Measuring Learning Quality, the Program for International Student Assessment (PISA), the Student Census Evaluation (SCE) and the Sample Evaluation, according to which our country, at the educational level, is located in the last places, at the Latin American and world levels.

State education in Peru is in a state of latency and, to a certain extent, backward both at the level of infrastructure, working materials, use of technology and at the level of pedagogical, methodological and didactic strategies. On the other hand, countries such as Brazil and Colombia have succeeded in all the above, by running programs of kinesthetic and corporal activities within the Area of Physical Education as well as in other types of courses. The results are positive, permanent and directed to the stimulation of the cognitive area. Villa El Salvador, the place where the research was carried out, is an area of more than 400 000 inhabitants, to the south of Metropolitan Lima.

The literature consulted on the area under discussion shows relevant results that were useful for the present study; Thus, the importance of corporal kinesthetic activity on intellectual increase, at both the cognition and the attitudinal levels is recognized (De la Cruz and Cruzata, 2017; Illesca and Alfar, 2017).

It is also stated that kinesthetic activity promotes spontaneous thinking, related to general and abstract thinking. Likewise, the application of such programs improves the integral development of students in relation to aspects of concentration, attention, retention of information and the adequate use of their body parts based on diverse arts such as dance and body expression (Gómez, 2017). Therefore, we define the body as the capacity to be aware of one's being, aware of one's body and of one's motor intelligences (Corvetto, 2016).

Play and physical activity are fundamental variables of a method that globalizes, gives meaning and motivates the formative process of a student (Espinosa, García and Rodríguez, 2018); In this way, movement is the basis for the psychic and physical maturity in every human being (López and Chacón, 2015), which is reaffirmed in the application of neurobic work, in improving the cognitive processes in five year old students (Ravello, 2016) and in contributing to the didactic development of the kinesthetic, linguistic and motivational formation (Larrea, 2016; Cárdenas, 2015 and Backes, Porta and Difabio, 2015).

Similarly, these capabilities contribute to biomotor development, promoting motor skills and neuromuscular work (Fort, Román and Font, 2017). The research is related to several studies on the body's kinesthetic activity and its contribution to cognitive development. In this regard, it is suggested that the theory of body kinesthetic intelligence that educates the body favors and stimulates the learning obtained by the students (Asqui, León, Santillán, Santillán, Obregón and Calero, 2017).

It has been stated how physical education programs stimulate the intraclass correlation coefficient, giving greater value to the Physical Education Area (Ruiz, Barrio, Ramón, Palomo, Rioja, García and Navia, 2017). Likewise, it has been shown that longitudinal studies clarify the relationships between early cognitive factors and changes in gross and fine motor skills during the preschool period, strengthening non-motor domains such as attention, emotion, behavior and socialization (Peyre, Albaret, Bernard, Hoertel, Melchior, Forhan and Ramus, 2019). It also refers to the importance of developing programs that integrate movement through cognitive tasks related to numerical skills and integrated physical activities (Mavilidi, Okely, Chandler, Domazet and Paas, 2018; Hestbaek, Andersen, Skovgaard, Olesen, Elmoose, Bleses, Simon and Lauridsen, 2017). Rigal (2006) states that programs are developed with the aim of changing the actions of the subjects with whom they work. It aims at having students who can manage to learn and to acquire both, knowledge as well as procedures and attitudes. Similarly, changes are evident at the level of cognitive development in preschool students after the implementation of various physical activity programs, expressed in language learning, academic performance, attention and memory (Zeng, Ayyub, Sun, Wen, Xiang and Gao, 2017). Thus, we assert that motor and cognitive skills in children 4-16 years old are in an upward progression from weak to strong in both complex motor and higher order cognitive skills (Van der Fels et al., 2015). It should be noted that physical activity improves mental health through a conceptual model that explains the underlying abstract mechanisms such as neurobiological, psychosocial and behavioral (Lubans, Richards, Hillman, Faulkner, Beauchamp, Nilsson and Biddle, 2016).

In addition, a sociological concern is identified regarding the transmission and acquisition of occupational and sports practices. In the face of this, John Dewey proposes a pedagogical approach to the body that goes in line with the prioritization of physical experience (Shilling, 2017).

In this way, an interrelationship is built between motor and cognitive development, building on the capacity for coordination in preschool students, based on developing play habits through outdoor physical activities (Pesce, Masci, Marchetti, Vazou, Sääkslahti and Tomporowski, 2016).

Early intervention at the preschool level for specific and advanced movements such as running, throwing, hopping, and jumping is critical for motor movement demonstration and evaluation (Klingberg, Schranz, Barnett, Booth, and Ferrar, 2018). This identifies motor functions that have been worked through short-term

programs, interventions and executive functions that contribute to the development of knowledge assimilation (Kelley, 2019). This produces impacts and improvements in the metacognitive processes that are expressed in interaction, behavior and academic performance (Tomprowski, McCullick, Pendleton and Pesce, 2015).

The research was justified, theoretically, by data on the importance and need to apply kinesthetic and body activities in three categories: perception, coordination and motor skills, for the integral formation of students at both the initial and primary levels. The aim was to contribute to the cognitive development of students. This research was carried out in Villa El Salvador district, and was applied to eight students from ages between five and nine years old.

As for the practical explanation, it was based on the identification, application, analysis and systematization of specialized activities at the kinesthetic and corporal formative stance. The reaction of the participating subjects to the activities was observed. The work was based on the assimilation, fixation and evocation of practical information both from an individual and group perspective. The aim is to validate the importance of body kinesthetic activities in the cognitive development, contributing and expanding the way of acquiring knowledge and skills.

From the methodological viewpoint, a categorization matrix was designed, which is composed of three main categories: 1) functional organic perception, 2) manual eye coordination, and 3) foot and motor skills. These, in turn, present nine subcategories. The technique of in-depth interviews with experts in the field was applied. Questionnaires based on open questions and cross-examination were used. Some of the dynamics used to collect data were field notes written in logbooks or field journals. The procedure of observation was applied, based on active participation, and the information of the participating subjects. This was reinforced by the use of the biographies and life stories.

## METHODOLOGY

Qualitative research is focused on understanding phenomena, exploring them from a perspective that take participants as a starting point from a natural environment and in correlation with their contexts (Hernández y Mendoza, 2018).

Designs that were used included case studies, deep documentary analysis of a holistic unit that give answer to the stated problem and contribute to the theoretical framework. These tools, in certain moments, use experimentation, constituting pre-experimental studies which become qualitative studies, since they use inductive methods (Hernández y Mendoza, 2018).

The study site was Villa El Salvador, a thriving district, founded on May 11, 1971. It has a population of 475,500 inhabitants, according to the study carried out by CPI (Compañía Peruana de Estudios de Mercados y Opinión Pública S.A.C.); it is the fifth most populated district in Metropolitan Lima, where there are 473 educational institutions at the early childhood level, 239 at the elementary level and 138 at the secondary level.

Case studies are used in research of a qualitative nature whose objective is to deepen and improve the quality of the given information, thus not in the quantity. They are also based on ethnographic and phenomenological studies related to the analysis of values, experiences and meanings of a social group (Hernández and Mendoza, 2018). In this specific study, the participants were students ranging from 4 to 5 years old at the early childhood level and from 6 to 10 years old at the primary or elementary level; they study in state and private educational institutions. They were selected according to similar characteristics such as age, family bonding, early stimulation level, socio-cultural level, economic and educational level.

The techniques used were the qualitative research interview, which was flexible, open and intimate, where data and information were exchanged to later construct meanings in relation to a topic (Hernández and Mendoza, 2018). In relation to the instruments, the questionnaire was used which, according to Bourke, Kirby and Doran (2016), is based on a group of questions about the variables that will be measured. These questions were open-ended which, according to Hernández and Mendoza (2018), offer ample information and are very useful when we do not have information about probable responses from the interviewees or when our questions are not sufficient. They are used when we want to explore into an opinion or the reason for a behavior.

Also, the use of field notes made it possible to record and prepare notes while the facts or circumstances related to the statements were being carried out. For this purpose, audio and video records, photographs, and the preparation of maps and diagrams were used (Hernández and Mendoza, 2018).

**CATEGORIZATION MATRIX**

It helps to build links between various categories or topics; it indicates some relationships which are located at the horizontal and vertical level. The researcher identifies if there is any link between these categories or themes, then explains if there are associations between them or not and why (Hernández, Fernández and Baptista, 2014). The research matrix was divided into three categories, which present three subcategories, respectively, with a total of 53 items. The category of functional organic perception has 16 items, whose subcategories are identify, recognize and perceive. The coordination category manual eye and podal eye, has 14 items, whose subcategories are: construct, draw and order, and multi-jump. Finally, the gross and fine motor category, with 23 items, whose subcategories are spatial stimulation, temporal stimulation, and body orientation. It was applied to 8 students whose ages range from 4 to 10 years old, belonging to the EBR in the early childhood and primary levels. In-depth interviews were developed with the registration of questions and cross-examination with experts in the subject. The research problem was posed: Does the body kinesthetic activity allow the cognitive development of the students of the primary school level? This was the starting point to initiate work. Concepts and information obtained through the execution of various activities proposed in the categorization matrix were collected and systematized.

Thematic area	Research Problem	General Objective	Specific Objectives	Category	Subcategory	Indicators	Items	
							Questions:	Interview
Villa El Salvador	Does the body kinesthetic activity allow the cognitive development of students in early childhood and primary level?	To interpret how body kinesthetic activity influences the cognitive development of early childhood and primary and middle school students	To interpret how body kinesthetic activity influences the perception of early childhood and primary level school students	Functional organic perception 14	Identifies geometric figures	Draws geometric figures	1P Draws horizontal lines. 2P Draws vertical lines. 3P Draws a circle. 4P Draws a square. 5P Draws a triangle. 6P Draws a rectangle. 7P Draws a cross.	Pregunt as: What do you think about the application of body kinesthetic activity through functional organic perception for cognitive development?  What do you think about the practice of body kinesthetic activity in the
					Recognizes and perceives numbers and letters	Recognizes and perceives numbers and letters with eyes open and closed	8P Perceives number sizes. 9P Perceives sizes of letters. 10P Recognizes colors.	
					Perceives with eyes closed amount of sounds	Understands, recognizes and differentiates various types of sounds.	11P Perceives clapping sounds. 12P Perceives snapping	

							<p>sounds. 13P Perceives whistling sounds. 14P Perceives sounds made with percussion keys.</p>	<p>execution of manual eye and foot coordination?  How does the body kinaesthetic activity work in the area of motor skills?  Ask</p>
			<p>To interpret how body kinesthetic activity influences the coordination of early childhood and primary level students</p>	<p>Manual eye and podal eye coordination 15</p>	<p>Builds structures</p>	<p>Builds towers and arranges sequences using elements.</p>	<p>1C Assembles a tower with 9 or more cubes (12 cubes). 2C Sort sticks by size.</p>	<p>Ask</p>
					<p>Drawing and ordering</p>	<p>Recognizes, mentions, verbalizes, and draws subjects, objects and daily life situations.</p>	<p>3C Recognizes animals. 4C Recognizes objects. 5C Draws a picture of himself or herself (boy or girl, recognizes his or her gender). 6C Recognizes body segments. 7C Recognizes joints. 8C Recognizes the 5 senses. 9C Says his or her full name. 10C Recognizes long and short.</p>	<p>What do you think about identifying geometric shapes, recognizing numbers, letters and perceiving various sounds, both with your eyes open and closed?  ?</p>
					<p>MultiJumps</p>	<p>Multi Jumps Performs jumps with</p>	<p>11C Jumps horizontally</p>	<p>What do you think about the physical and</p>

						<p>varying degrees of difficulty (mental gymnastics).</p> <p>40 to 50cm. 12C Moves by jumping in a 12-step order. 13C Performs 10 to 12 jumps alternating feet. 14C He makes 3 jumps from different heights. 15C Do 3 to 5 sequences of jumps coordinating arms and legs.</p>	<p>cognitive activities of assembling, ordering, drawing and multi jumping?</p> <p>How would spatial and temporal stimulation and the ability to orient the body work?</p>
		<p>To interpret how body kinesthetic activity influences the motor skills of early childhood and primary level school students</p>	<p>Space stimulation 20</p>	<p>Spacestimulation</p>	<p>Throws a ball with calculation and precision.</p>	<p>1M Throws a ball at 5 different heights and circumferences.</p>	
				<p>Temporal Stimulation</p>	<p>Walks, runs and solves problems in the shortest time possible: notion of time.</p>	<p>2M Walks carrying a glass of water. 3M Walks carrying a book on his head. 4M Runs passing obstacles with 3 degrees of difficulty.</p>	
				<p>Bodyorientation</p>	<p>Walks with eyes open and closed. Able to locate in front of morphofunctional situations.</p>	<p>5M Walks through space without crashing and without sound. 6M Walks through space without</p>	

							crashing and at the rhythm of sound. 7M Walks forward pointing heel and toe. 8M Walk backwards pointing heel and toe 9M Walk in a horizontal line sideways. 10M Walk in a diagonal direction. 11M Distinguish below. 12M Distinguish above. 13M Recognize forward. 14M Recognize behind. 15M Recognize left. 16M Recognize right. 17M Recognize inside or enter. 18M Recognize outside or exit. 19M Recognize envelope. 20M Recognize under.	
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**Categorization Matrix**

**Delay:** Scores equal to or less than 29 points

**Risk:** Scores from 30 to 39 puntos

**Normal:** Scores equal to or bigger than 40

The analysis of the data was carried out with the software Atlas Ti, in addition to the inferential analysis of the process of triangulation of the observed facts (logbook and field notebook) with the theoretical constructs of the research and opinions of the experts.

## RESULTS

The results obtained in the process of research allowed to arrive at generalizations around the cognitive development as an effect of the corporal kinaesthetic activity, whose theoretical suppositions or indicated categories offer a vision of how this process is made; in addition, these conceptualizations are product of the triangulation made, not only from the perspective of the state of the art and the findings found in the investigation, but also incorporating the opinions of experts in the theme, gathered in in-depth interviews and from some successful experiences.

Regarding the category of organic motor perception, it was observed that the students carried out harmonic, coordinated and oriented movements; they had good frontal, lateral and diagonal displacement, weight control and accuracy in the execution of activities. With closed eyes, they achieved with excellence to perceive and identify diverse quantities of sounds; the same thing happened when drawing numbers and letters on their backs, demonstrating a great capacity of memory, retention and assimilation of information. Likewise, they correctly drew geometric figures, rows and columns using tennis balls and wooden sticks. Finally, they executed three activities simultaneously. They made rows, columns and diagonals; they managed times: fast, slow and normal.

Diego, a child with special educational needs, showed attention difficulties in moving objects from one point to another; however, after the guide's precise indication, he did it correctly. He showed lack of postural control, he ran leaning his body to the right side and dragging his left foot. However, when working standing on a chair he showed postural control, static balance and body orientation. He was observant and cautious. He was able to recognize and draw rows, columns and geometric figures using tennis balls. By closing his eyes, he perceived with excellence, quantities of sounds and drawings of letters and numbers that were made on his back.

Claudio, a child with Down syndrome, developed great capacity for order and cleanliness. He helped build structures and roads using canes and ropes. He completed an obstacle course with the guide. He moved balls from one point to another: one at a time and two at a time, first with the guide and after five repetitions he did it by himself. He ordered and saved all the games, the ropes, rubber balls and, at the end, the canes; first the lighter ones and then the heavier ones. He played the game of colliding his palms in different directions, performing with excellence.

Complementarily, through the Atlas-Ti software, the qualitative and categorical codification of the interviews made to the experts, specialists in the subject, was achieved. The results showed the presence of six codes belonging to the categories and subcategories investigated. It was observed that the category "functional organic perception" was the most substantiated with a value of 90 citations placing it in first place, while the subcategory "identifies geometric figures, recognizes numbers and letters and perceives sounds with closed and open eyes" was the least substantiated with only 19 citations. As for density, it measured the level of saturation of the categories and showed the relationship between them. We observed that this category had two saturation points, that is, two related codes. This led to the confirmation that the category "organic motor perception" was the most developed of the three categories investigated both at the level of the research subjects and the interviews conducted with experts.

Gardner (2014) states that the activity of functional organic perception is supported by the development of body kinesthetic and the use of body segments with precision and skill. We confirm the findings with those of Durand and Ramos (2016), as beginning and elementary students improve their level of concentration, attention, and retention of information by making use of their physical segments.

In the case of Mateo, it was observed that he had great body kinesthetic performance, excellent attitude towards work; in addition, he demonstrated security and emotional control by recognizing and identifying geometric figures, quantities of sounds, and perceiving both numbers and letters with his eyes closed.

Therefore, the good frontal, lateral and diagonal displacement found in most students confirms Gómez's (2017) statements, who pointed out that kinesthetic activity promotes spontaneous thinking which in turn is related to general and abstract thinking.

The expert Giovanni Corvetto explained that the organic-functional perception stimulates the development of neurotransmitters such as serotonin, considered the hormone of happiness, which accelerates learning, and dopamine that motivates to get what we want, segregated with more affluence in people who practice physical activity. Through perception, the child forms identity, self-esteem and self-concept, very important elements for



cognitive development. They go hand in hand with motor skills, which is an action that carries intention, thought and emotion. There is a symbiotic relationship between kinesthetic activity, cognitive and emotional development.

Likewise, Óscar Colque proposed that the organic-functional perception is developed through the theories of the game that are the physiological, biological, psychological and the educational theory. He stated that the latter has four meanings and that one of them talks about functional games. It states that the child, from birth, recognizes figures, images, develops the senses, recognizes through touch, develops taste, etc.. It is supported by functional games, contributing to the cognitive process of the child from an early age.

Edgar Damián explains, in a global way, that perception allows us to become aware of the world around us. That the body kinesthetic activity works internal and external movements; it refers to how bones, muscles and joints make possible that those movements are carried out at an organic-functional perception level. This stage of children's formation is based on the use of the senses, sensors and receptors. He indicated that the recognition of quantities of sounds and the identification of geometric figures, numbers and letters with closed eyes is important. In the category of manual eye coordination and foot-eye coordination, it was observed that the students have great capacity of observation and identification of images when assembling structures of geometric figures and staggered figures of rows and columns using wooden sticks and tennis balls. They presented very good hand-eye and foot-eye work when conducting balls from one point to another, when throwing and receiving. They recognized all their joints without mistake, made vertical and horizontal jumps properly, cushioned the fall, showed notion of jumping speed and body weight control. They managed to jump using only one foot for more than twelve meters. They identified their body segments, although they presented slight confusion when differentiating thigh and forearm. They identified and explained the function of the sense organs. They were able to develop the coordination sequence properly by completing 50 synchronization movements of arms and legs.

With Diego, there was a significant improvement in body self-control, the chair technique helped him greatly. He performed body figures, worked on breathing exercises and standing meditation on the chair. He expressed good balance work, lifting one knee and arms. With open eyes, he showed good capacity to identify geometrical figures and numbers on his back; but, when doing it with closed eyes, he tends to make mistakes. He demonstrated motor clumsiness when performing fine motor games. When jumping, he improved his weight control. He managed to draw staggered figures. He remembered joints, senses and works 30 steps of the coordination sequence.

In Claudio's case, he drew vertical and horizontal lines. He managed to draw a square and a circle; in addition, on two occasions, he formed a row and a column with tennis balls and without help, his attention and concentration lasted approximately one minute. He worked visual chase with predominance of the left side. He managed to throw objects from his location at a distance of one meter; but, due to his hypotonia, it was difficult for him to receive balls. He successfully drew three points on a sheet of paper. He made the crawl and ventral plate shape. With the help of the guide, he managed to perform the quadrupedal position. He improved his tonic-muscular capacity.

The results obtained through the Atlas-Ti software corresponding to the category of manual eye and foot coordination showed that it was placed in the third position of the categories presented with a value of 46 substantiated citations and, at the subcategory level, it was placed in the second place with the same amount of citations. In terms of density, it was observed that the category had two saturation points, while the subcategory had only one. According to this, we can affirm that the number of related codes between the category and subcategory is moderate; that is, there is an adequate correlation between the results obtained, both from the research subjects and from the interviews with experts. In relation to this category, it was placed in third position. This corroborates what Ruiz et al. (2017) and Del Carmen (2016) have pointed out, who propose that motor coordination, at the kinesthetic level, embodied in physical education programs, stimulates the intraclass correlation coefficient.

We identified that the child Mateo developed great teamwork, solidarity, cleanliness and order; he knew when to stop and continue; he identified "command" voices; he located his body in different planes and oriented himself correctly in formations of rows and columns; he developed good jumping and precision when performing sequences of actions coordinating upper and lower limbs; he recognized his body segments, built structures and overcame obstacles; finally, he identified his exteroceptive sensory organs, explained them and gave examples; he coincides with what was pointed out by Klingberg et al. (2018), who express that the evaluation of the coordinated abilities of the movement are fundamental at the preschool level because they allow the early intervention of specific and advanced motor movements like jumping, hopping, running and throwing.

Zerf (2019) states that dance is part of an overall coordinated and segmented physical activity, it contributes to physical health and to emotional and motor functions of the body.

Physical activities such as dancing, building structures, running and jumping allow the improvement of manual eye and foot coordination, since they develop new knowledge from the act of playing in education (Demiroz, 2019). It coincided with Pietsch, Böttcher and Jansen (2017), who propose that physical activities in the long term and through sports actions such as jumping, running and catching, help to modify the mental rotation performance.

According to the expert Giovanni Corvetto, manual eye coordination and foot coordination allow the development of playful components for the achievement of learning through constant motivation. The child works on the graphomotor and space-time notions that indicate how the child writes and positions himself in front of the sheet. It indicates that the child who does not move will have learning problems at the level of general coordination and fine motor skills.

Likewise, Oscar Colque pointed out that this type of coordination is worked through physical education and movement education. Perception is a means that allows him to interpret the manual eye and podal eye capacity. Playfulness is the child's first form of learning. It develops cognitive stimulation and strengthens previous knowledge. It is necessary that the child carries out activities of structural and conceptual formation.

Edgar Damián mentioned that coordination deepens the activity of movement in specific actions such as jumping, running, throwing, catching, dancing, assembling and disassembling, which are fundamental activities within the body kinesthetic activity. It performs the intervention of sensory organs such as sight and touch. There is a correlation between what your eye sees and your feet and hands are performing, contributing to functional organic development.

Around the motor category, it was observed that students performed multi-jump dynamics in various directions correctly, first with both feet and then using only one foot. They managed to make lateral jumps alternating their feet. They were able to perform manual eye and foot coordination variants. By running and overcoming obstacles in space they reflected postural control. They walked on a 10cm balance beam, jumped the cloth staircase on the floor and walked with the book on their head correctly. They placed objects in space and described them. They placed themselves correctly on an organic level in front of objects in the space such as tables, chairs, ropes, canes and trees. They mentioned senses and joints in an ascending and descending manner. They gave examples of each and identified what type of senses were worked on in a given organic motor activity. They demonstrated good body memory, understood concepts and differentiated inside, outside, over, under, left, right, among others. With Diego, a level of immaturity was identified because his mental age is 7 years old and his chronological age is 9 years old, that influences his motor skills. He overcame obstacles built with ropes and canes located on the floor of the playing field; although he presented problems with laterality, he overcame them with constant effort and repetition. It was difficult for him to coordinate the sequence of jumps between his arms and legs. There was greater harmony in walking and jumping, alternating feet and walking through space without crashing. He recognized correctly the five senses and gave examples. By playing speed games, he improved his self-control, attitude and body weight control. He improved his organic positioning in front of the elements. On the other hand, he has difficulty identifying front, back, inside and outside.

In Claudio's case, he improved his capacity to grasp, strength, as well as his attention. He managed to form a row and column using tennis balls. He achieves this in two opportunities by paying attention for about 4 minutes. He identified up, down, forward and backward. He managed to get up and down from a chair from a standing position, was able to stand on the chair for more than a minute. He has a preference for the left leg. He managed to run from point to point with a tonic postural control. He managed to run and climb into the chair correctly. He improved his tonic capacity when playing "capachún", as well as his confidence to climb heights. Recognized space and time. At the level of body orientation, he knew when to get on and off the guide's back and when to give a hug.

The results obtained through Atlas-Ti software indicated that the motor category had a value of 81 substantiated citations and 48 at the subcategory level. As for their density, it was observed that both the category and the subcategory have two saturation points; that is, they have two related codes each, respectively. This allowed us to establish that, at the level of categories, it was located in the second position, while at the level of subcategories, it was located in the third position both in terms of importance and body kinesthetic development. A relationship of balance was exercised between the categories of organic functional perception and manual eye and foot coordination. It coincided with what was exposed by Fort, Román and Font (2017), who propose that the development of a skill contributes to the growth of possible motor activities that improve and favor motor competence by reinforcing neuromuscular work. Similarly, with the affirmation of Asqui, León, Santillán, O., Santillán, A., Obregón and Calero (2017), who mention that the theory of kinaesthetic body intelligence educates the body, favors it and stimulates it at the level of learning obtained through space-time experiences.

We recognize that Mateo liked to work at a socio-cultural level, in a team, because he did it as a guide and leader teaching the forms; he sought to carry out his activities as best as possible, in order and tranquility, going at his own pace; he did a great job identifying time and space, as well as body orientation, being able to explain it with his words and giving examples; had good retention of body image and, finally, recognized correctly his directions (forward, backward, to the sides, vertical, horizontal), laterals (left, right, diagonal) and levels (up, down, over, under, inside, outside).

The results corresponded to what Serrato (2016) pointed out, who states that the practice of corporal sport activity helps to promote attention and coordination at a temporal and spatial level; in this way, it contributes to cognitive development. Likewise, with what was indicated by Faber (2017), who presents the motor development as one of the main areas for the brain development and that the symbolic understanding in preschool children is given through the understanding of movement, gesture and dance. Also with Peyre, Albaret, Bernard, Hoertel, Melchior, Forhan, and Ramus (2019), who demonstrate through longitudinal studies that changes in fine and gross motor skills strengthen non-motor domains such as attention, emotion, behavior, and socialization.

According to the expert, Giovanni Corvetto mentioned that motor skills are fundamental to develop space and time location. It develops its general orientation through basic motor patterns and social activities. Its absence causes organic uncoordination, low self-esteem and an involution of its self-concept. Some have hyperactivity, dyslexia, elements that are caused by a bad psychomotor development given by the lack of kinaesthetic and corporal activities.

Additionally, Oscar Colque affirmed that motricity is based on the repetition of acts and the sum of experiences that form part of motor development. The child, through the repetition of the game, learns to validate his knowledge and skills. The motor skills seek the development of the child, allowing him to have a good walk, develop his balance and contribute to the control of his brain hemispheres. It coincides with what Pescebet al. (2016) says, who mentions the importance and need to develop play habits through motor activities outdoors, looking for the interrelation between motor and cognitive development.

On the motor area, the expert Edgar Damian supported the idea of grouping concepts such as mobility, displacement and basic motor patterns. He affirms that it is the means by which the human being develops a life cycle. To talk about motor skills is to talk about muscles, systems, joints. It improves physical abilities such as strength and flexibility. It allows at a cognitive level the development of memory, attention, retention and assimilation of information.

## CONCLUSIONS

The analysis of the research process and its results determined that the functional organic category allows the correct development of the organism at a kinaesthetic and body level through the recognition of geometric figures, identification and perception of numbers and letters with and without the use of the sensory organ of sight. In addition, various types of sounds are recognized and differentiated. In this way, the category contributes and significantly influences the cognitive development of students at early age and primary level.

On the other hand, we can establish that the category manual eye coordination and foot eye allows the correct development of the body kinesthetic organism through the construction and order of physical structures, such as the assembly of towers and the sequential construction of figures using diverse conventional and non-conventional elements. It was possible to recognize, verbalize, draw, subjects, objects and situations of daily life. In this way, the category contributes and influences significantly in the cognitive development of the students of early childhood and primary level. In the same way, the motor category makes possible the correct development of the body kinaesthetic organism by means of space-time stimulation. It was possible to work the calculation and precision when throwing balls to a fixed point located in different levels. The notion of time was improved through the physical execution of the walk. Finally, an excellent progress of body orientation was observed through the location of the body in front of objects. Thus, this category also contributes and significantly influences the cognitive development of students at the initial and primary levels. Therefore, we can conclude that, after analyzing the three categories of work based on specialized kinesthetic body activities, these contributed and significantly influenced the cognitive development of the 8 students of early childhood and primary level, thus giving answer to our research problem.

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