



## Physical Activity in the Creative Learning of Adolescents



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### Abstract

In the educational context, the use of physical activity as a teaching resource to generate creative learning in adolescents is commonly ignored by teachers, wasting the opportunity that, through body movement, the student can acquire significant knowledge for his life. In this context, the objective of the research was to analyze the incidence of physical activity on the creative learning of adolescents. The quantitative approach was used by collecting quantitative data and its analysis was carried out with the help of computer and statistical tools that showed the reality of the management of physical activities. A population of 129 students was considered the General Baccalaureate of the Gonzalo Abad Grijalva Educational Unit in the city of Chone, province of Manabí – Ecuador. The Results demonstrate a relevant connection between physical activity and the development of thinking skills, obtaining that the strengthening of interpersonal relationships between students, the relaxation of the body, and the promotion of health care, constitute a path for the development of creativity in the acquisition of interdisciplinary knowledge in the educational process. In conclusion, the mainstreaming of the importance of physical activity, based on the educational curriculum of Physical Education, positively affects the acquisition, development, and use of creative thinking in adolescence.

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## 1 Introduction

The purpose of the research was to analyze the relationship between the constant practice of physical activity carried out by adolescents and its impact on the development of creative learning as a way to promote their personal and physical well-being. This investigative process will be carried out with adolescents between 15 and 17 years old who are educated in an educational institution located in the Chone canton of the Province of Manabí.

Regarding the fact that adolescence is a stage where significant physiological, psychological, emotional, and social changes originate, it is vital to highlight the importance of carrying out activities that favor the strengthening of physical and mental health, through the execution of a set of actions to keep the body in optimal condition. In the same sense, mental health encourages the identification of factors that stimulate the ability to think, feel, and act in the face of different situations that arise in life and that affect psychological, emotional, and social well-being.

According to the World Health Organization (WHO), health is “the comprehensive state of physical, mental and social well-being, and not merely the absence of disease” (WHO, 2016). From the above, we gradually came to understand how the most effective therapeutic approaches are those that treat the body and mind together. Likewise, physical activities are part of the cultural heritage of humanity, from the most everyday ones such as walking, a fundamental anthropological constant (Kirsch, 1985) to other less common ones such as football or any other sport.

According to Viteri (2022), the recurrent practice of physical activity, in addition to the already known physical benefits that it brings with it, which are reflected in an optimal state of health, is also associated with the stimulation of the mental aspect, learning and the concentration of adolescents. Indeed, consulting empirical references shows that physical activity in educational spaces contributes to the development and maintenance of students' cognitive functions, which is reflected in better academic performance (Runco & Beghetto, 2019; Silvia, 2008).

Thus, it is considered that applying physical activity in the educational curriculum will help promote education that creates healthy environments and develops life skills where children and adolescents are taught to adopt or strengthen healthy lifestyles. This requires that the knowledge, skills, and values acquired facilitate healthy behavior, develop healthy relationships, make decisions or solve problems creatively in different environments, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and manage their lives healthily and productively (Liao, 2003; Demarest, 1997). Thus, the following question was posed: How does physical activity affect the learning of creative thinking in adolescents?

In this sense, the general objective of the research was established to analyze the incidence of physical activity in the creative learning process in adolescents (Baeten et al., 2010; Korucu & Alkan, 2011). Finally, the study was developed based on specific objectives: to theoretically substantiate the impact that physical activity has on the development of creative learning in adolescents; carry out a field study that allows us to investigate the methodological strategies that teachers apply through physical activity and the results in the creative learning of students; design a guide of methodological recommendations that promote creative learning through physical activity (Kahn et al., 2002; Spence & Lee, 2003).

## 2 Materials and Methods

The present study was framed in a quantitative approach, and with a field design which is defined by Kerlinger (2002). Statistical techniques were used for the analysis of the data collected, to present a description, explanation, prediction, and objective control of the causes and prediction of the occurrence of the research problem, base the results and conclusions on the rigorous use of the metrics or quantification, both of the collection of its results and their processing, analysis, and interpretation.

Regarding the level of research used, it was guided by a descriptive level, which, according to what was stated in Arias (2012), descriptive research consists of the characterization of a fact, phenomenon, individual, or group, to establish its structure or behavior. According to the population, this is the one that is reduced for the study and the sample is not needed, therefore it focuses on the total number of people who will be investigated. The study population was defined, limited, and accessible, and formed the reference for the selection of the sample, which meets a series of predetermined criteria (Arias et al., 2016).

The present research was developed in the “Gonzalo Abad Grijalva” Educational Unit in the city of Chone. The sample corresponds to 129 students from the General Baccalaureate, with a total study universe of 660 students divided into 30 parallels, 42 teachers, and 3 administrative. The sample will determine a part of the reality that will be analyzed

for investigation, that is a subset that is taken from the population (Carrillo, 2015). The sample was selected intentionally, considering a population where precise data could be determined based on institutional availability.

The Survey research technique was used to collect data, which was executed through a structured questionnaire applied to the representative population of the Educational Institution (Cisneros et al., 2022). For the process of applying the research instrument, the following actions were carried out: request for the respective permits from the institutional authority; guidance to students regarding informed consent and the importance of their participation in this research process; application of the digital survey, using the Google Forms tool; and verification of the number of students surveyed to the responses received in the results matrix.

### 3 Results and Discussions

#### *Physical activity in the creative learning of adolescents*

Physical activity is considered as any body movement produced by the skeletal muscles of the body themselves that requires energy expenditure. These activities include exercise, but also other activities that involve body movement and are carried out as part of moments of a game or some activity (Rodríguez et al., 2020). At the same time, active forms of transportation, household chores, and recreational activities. Among the modalities of physical activity are physical play, recreation, formal and informal sports – organized or competitive – and indigenous games or sports.

According to the WHO definition, sport constitutes the different forms of physical activity that, through casual or organized participation, aim to express or improve physical fitness and mental well-being, form social relationships, or obtain results in competition at all levels. Sport has important benefits when it is well organized and led by qualified coaches to play a positive role and inspire values that guarantee a respectful sports process among boys, girls, and adolescents (Moreno et al., 2020).

The Education stage in learning is directly related to personal development in the process of growth in early childhood and influences the entire life cycle of an individual, being an essential sphere in human development and its quality educational process (Espinosa & Cebamano, 2016). Learning experiences cannot be dissected into distinct areas of cognitive, social/emotional, and physical development, but rather are integrated and dependent, as this balance can be achieved through creative and interactive play, which supports and provides scaffolding, to all areas of development and curricular content (Calderón, 2021).

In another sense, the types of physical activities according to the number of participants make a distinction between individual and team sports. It can be discussed depending on the number and attitude of the athletes who participate in sports exercise (Balada & Giménez, 2020):

- Individual activity. They are those that the player practices alone, without the help of others. Sports such as gymnastics and athletics are two examples.
- Group activities. They are the ones who combine several players to train collectively to defeat the opposing team. Baseball, volleyball, and soccer are some examples.
- Team activity. They are those who participate in a competition with a certain number of players but do not form teams among themselves. For example, cycling, marathons, or boxing.

#### *Sports practices based on the interests of adolescents*

Martínez et al. (2020), mention that sport is a term used to describe a particular category of regulated competitive activities, the practice of which stimulates the social, cognitive, and physical capabilities of the participants. In that sense, they differ from gaming in that they are seen as a discipline that goes beyond simple entertainment. They also require practice, concentration, and a specific set of skills.

Another point is that sports play an important role in modern life, both when they are practiced and when they are broadcast and turned into a spectacle for entertainment purposes. Although there are unofficial physical activities that are widely practiced, professional sports practice is usually supervised and regulated by various public and private institutions that comply with technical standards established at a global and local level (Velázquez, 1996).

### *Relationship between physical activity and learning in adolescents*

As far as cognitive psychology is concerned, it is a branch that studies the processes of the human mind, such as thinking, reasoning, perceiving and understanding the world, communication, and behavior. The proposal of psychologist Howard Gardner made it possible to justify the capacity for cognition, giving rise to new pedagogical and institutional practices that allowed the development of various cognitive skills. Howard Gardner described eight intelligences, and all humans have these intelligences that, depending on our biology, interaction with our environment and our culture, allow each intelligence to develop to different degrees and in unique ways (Solano, 2022).

According to Armstrong (2000), each of these intelligences represents a specific ability that allows people to solve problems and adapt to their environment effectively. This is related to the theory of multiple intelligences identified by Howard Gardner, of which kinesthetic bodily intelligence stands out, as the ability to unite the body and mind to achieve the improvement of physical performance, which begins with the control of the automatic and voluntary movements, moving towards using the body in a differentiated and competent way (Álvarez et al., 2021).

In other words, body intelligence is also responsible for the management of strength, coordination, balance, speed, and flexibility, all of this depends on body expression and the perception of measurements and volumes as well as the learning and automation of skills (Gardner, 2016).

Neurosciences are the set of sciences and scientific and academic disciplines that allow the study of the nervous system, focusing attention on brain activity and its relationship and impact on behavior; where it is presented as a fairly recent branch of research whose origin dates back to the 1960s, addressing neurobiological aspects of behavior supported by cognitive psychology, linguistics, anthropology, and artificial intelligence, among others. Furthermore, it is a set of sciences whose interest in being studied has increased during the last decade of the 20th century (Pulido & Ortega, 2020).

Furthermore, the Physical Education curriculum issued by the Ministry of Education of Ecuador proposes the development of four curricular blocks: Playful, Gymnastic, Expressive Corporal – Communicative, and Sports Practices. Additionally, two transversal blocks; the Construction of Body Identity and Relationships between Body Practices and Health (Ministry of Education, 2016).

### *Benefits of Sport*

Adolescence is one of the stages of human development that is usually very present in the consciousness of all people. It is characterized by a series of visible physical, psychological, and social changes that end with the end of human growth (Ortiz, 2022). On the other hand, in the research by Rodríguez et al., (2020), they mention that it is worth highlighting the importance of transferring the benefits of physical activity from adolescence to adulthood and old age. This means that engaging in physical activity during adolescence reduces the risk of developing obesity in adulthood, along with a lower risk of developing known chronic non-communicable diseases such as diabetes, hypertension, and cardiovascular problems, among others. Furthermore, it is necessary to consider that adolescence is one of the stages with the greatest changes, from physical changes that are evident quickly, to other biopsychosocial ones (Muñoz, 2022).

Thus, due to the unique characteristics of young people, adolescents undergo a series of changes that can cause emotional instability if not managed properly (Gujer, 2021). Noting that at the biological level as a pillar of learning for life (Zaragoza et al., 2012), the additional benefits of physical activity in adolescents are: the reduction of cardiovascular risk, greater bone mineralization, and reduced risk of suffering from osteoporosis in adult life, especially in women

### *Results obtained from the application of the survey*

The data matrices and graphs detailed below have been prepared based on the results obtained from the study survey application. The analysis brings together the results of age and gender that were taken from the Gonzalo Abad Grijalva Institution with adolescents from the General Baccalaureate, made up of a group of 17-year-old students that corresponds to 54% of the sample; 16 years old, 29% and 15 years old, 17%. With gender, 52% belong to the female, while 48% to the male. The results are shown in Table 1.

Table 1  
Frequency of performance and use of technological devices in physical activity

Physical activity	Frequency	Percentage (%)	Device use	Frequency	Percentage (%)
Always	38	30	Always	22	17
Almost always	48	38	Almost always	43	33
Rarely	39	31	Rarely	47	37
Never	4	1	Never	17	13
TOTAL	129	100	TOTAL	129	100

The greatest relevance is obtained that 38% of the students almost always carry out physical activity, and 30% always do it, emphasizing that 68% of the sample gives a significant value, if they carry out any activity. This means that 50% always or almost always use technological devices, divided into 17% and 33% respectively, while 31% do so rarely and 1% never. Table 2 shows the perception of physical activity in the ability to concentrate during the execution of school tasks.

Table 2  
Perception of physical activity on the ability to concentrate during the execution of school tasks

Options	Frequency	Percentage (%)
Agree	64	50
OK	63	49
I don't agree	2	1
TOTAL	129	100

When wanting to know if physical activities contribute to the ability to carry out tasks, the result was that 50% of students agreed that practicing some physical activity contributes to their concentration, 49% agreed, and 1% disagreed. Table 3 shows the predisposition for learning after physical activity.

Table 3  
Predisposition for learning after performing physical activity.

Options	Frequency	Percentage (%)
Very willing to learn	106	83
With a little predisposition to learn	21	16
No predisposition to learn	2	1
TOTAL	129	100

After doing some physical activity as they felt, where it was found that 83% of the students were very predisposed to learning, 16% had little predisposition to learning, and 1% were not predisposed to learning. Table 4 shows the results of the benefits of the activity in creative learning.

Table 4  
Benefits of physical activity in creative learning.

Options	Frequency	Percentage (%)
Yes, it seems beneficial to me	115	89
I don't consider it beneficial	4	3
I'm not sure	10	8
TOTAL	129	100

From the survey carried out on adolescents from the Gonzalo Abad Grijalva Institution in the General Bacallaureate, about whether they think the inclusion of physical activities and its benefit in learning, the result was that 89% of the students found it beneficial, 3% do not consider it beneficial, while 8% are not sure.

Table 5 shows how critical thinking, and the sports activities carried out by students are related.

Table 5  
Preferred activities related to the development of creative thinking.

Options	Frequency	Percentage (%)
Board games (chess)	15	12
Individual games (running, jogging)	34	26
Team games (football, basketball)	69	53
Outdoor sports (golf, swimming)	11	9
TOTAL	129	100

The results contained in the survey determined that 12% of students would play board games to obtain optimal creative learning development, 26% of students would play individual games, 53% would play team games and 9% would practice outdoor sports.

### Discussion

The results obtained in this research describe physical activity as an activity whose methodology allows us to retain greater teaching considering that it helps concentration, eliminates stress, and greatly increases motor activities. From the people surveyed it was observed that physical activities such as Soccer and basketball are the most common since, apart from agilizing the body, they also do so with the mind. Another activity practiced at any age is walking and running, whether for health or hobbies (Velásquez et al., 2022).

Board games where concentration is used are also widely used, thus allowing the game to be part of the teachings considering that a balance is found throughout the process. Thus, concerning the results in Table 1, the frequency of performing exercises is high among adolescents, which is related to what was suggested by Tenorio (2017), because physical activity is part of the development of personality from childhood to youth.

Likewise, the results of Table 3, after performing some physical activity, adolescents feel very predisposed to learn, in other words in the research by Rodríguez et al. (2020), where they investigated learning environments as an active methodology in early childhood education considering that physical activity is an enhancer of cognitive development and together with an age of development, the result was that this methodology requires the development of continuous movements that favors physical activity and therefore optimal development of the physical and cognitive abilities of boys and girls; These results are similar to those obtained in this research since they seek physical and mental stability to obtain knowledge.

Guardia (2000), concerning physical activity as a function of free time, has become for a large part of the population a highly appreciated pastime, becoming an important consumer product that drives development for young people. Different studies have described that constant physical activity provides numerous benefits for students' physical and mental health (Márquez et al., 2006).

In the sports field, executive functions are related to the success of various tasks necessary during physical practice (Martín-Martínez et al., 2015). Therefore, it is important to delve into how physical activity can transcend behavior, behavior, and the dynamization of complex cognitive processes. According to Tenorio (2017), the practice of constant physical activity stimulates neuronal growth and prevents neurodegenerative diseases; It also affects psychological aspects such as improving self-esteem and self-acceptance.

Bernate et al. (2020), in the research on the impact of physical activity and sports practice in the context of higher education, illustrate an aspect of quality and inclusion where different outdoor use programs have been incorporated, promoting healthy habits, encouraging spiritual strengthening, the spirit of the entrepreneur, creating new ideologies which contribute to society as actors in a space for the socialization and integration of the collective community; The same thing that is also reflected in this research seeking integration throughout the educational community.

According to Sánchez et al. (2023), in a systematic review of the importance of physical exercises, the importance of interventions to promote physical exercise in self-efficacy and learning itself is described as a fundamental activity,

which is very positive since it has the increase in perceptions and cognitive learning thus generating a discovery of the entire process.

Based on the above; to promote creative learning, it is recommended to implement sports in educational institutions with the performance of recreational and creative activities to have a healthy habit and a way to connect the mind with the body in educational teachings. It is recommended to promote sports in education since apart from having physical activity, behavioral and cognitive knowledge is also generated in the people who practice it. And based on this, carrying out physical activity with continuity and curricular order, contributes to keeping the body in good condition, resulting in a better understanding of the teaching-learning knowledge (Beaton et al., 2011; Wicker et al., 2013).

## 4 Conclusion

Based on the data obtained, it was recorded that, in the research carried out, integrating physical activity into the education curriculum plays a fundamental role in the creative learning of adolescents, by stimulating cognitive, emotional, and social development. Gaining a deeper understanding of the impact of sport as a method to improve behavioral skills, which unites coexistence between students and generates a healthier environment.

It was found that physical activity is a process that helps improve motor skills that contribute to an active lifestyle, which is why it is currently necessary to practice sports for a certain period and thus improve the health of students and develop many motor skills, which provides a comprehensive approach that stands out not only in terms of physical benefits but also as a means to develop creative thinking and promote cognitive development.

Finally, it was recorded in the development of the research that there is a coherent relationship between the development of creativity and physical activity, the latter being understood as a useful tool to improve the psychoeducational well-being of students. Therefore, it was noted that incorporating more into educational programs can contribute to well-being and enhance their skills, both creative and learning. Therefore, highlights an educational environment that encourages creativity and critical thinking, thus benefiting the comprehensive development of adolescents.

### *Conflict of interest statement*

The authors declared that they have no competing interests.

### *Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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