REVISTA MULTIDISCIPLINARIA
DESARROLLO AGROPECUARIO, TECNOLOGICO, EMPRESARIAL Y HUMANISTA
UNIVERSIDAD TECNICA DE COTOPAXI - LA MANA. COTOPAXI. ECUADOR

Volumen 5. No. 3
octubre 20223

ISSN: 2773-7527

Chase games in the development of the motor reaction capacity in schoolchildren in general education and middle school

Juegos de persecución en el desarrollo de la capacidad de reacción motriz con escolares de educación general básica media

Jhon Daniel Sánchez Calderon[1], Dennis José Hidalgo Alava[1], Washington Ernesto Castro Acosta[1], Verónica Jeannette Cevallos López [2].

[1]Universidad Técnica de Ambato, Facultad de Ciencias Humanas y de la Educación/ Unidad de Investigación y Desarrollo, Ambato – Ecuador
FCHE, Pedagogía de la Actividad Física y Deporte, Ambato – Ecuador
[2]Unidad Educativa Mario Cobo Barona, Ambato – Ecuador

Correo de correspondencia: jcalderon6089@uta.edu.ec, dj.hidalgo@uta.edu.ec, we.castro@uta.edu.ec, jeannette.cevallos@educacion.gob.ec

Información del artículo

Tipo de artículo:
Artículo original

Recibido:
10/07/2023

Aceptado:
30/09/2023

Publicado:
31/10/2023

Revista:
DATEH

Resumen

El desarrollo del proceso que se lleva a cabo en los distintos ámbitos y se orienta a conseguir un adecuado e idóneo desarrollo de la capacidad de reacción motriz en los estudiantes, en base a estos preliminares se tuvo como objetivo general determinar la incidencia de los juegos de persecución en la capacidad de reacción motriz en los escolares de general básica media, durante el periodo octubre 2022-marzo 2023. Se desarrolla un estudio basado en una metodología donde se combina sea la investigación bibliográfica como la investigación de campo para poder describir las variables y de esta manera tener un acercamiento a la realidad de los estudiantes que han sido de vital importancia al momento de realizar esta investigación. Con la ayuda del test de Litwin permite evidenciar que cuando se lleva una adecuada planificación se logra resultados que son favorables, por ende, al momento de la ejecución se recepta información de relevancia, donde los docentes y los estudiantes con el desarrollo de las actividades como son los juegos de persecución, muestra un factor positivo del desarrollo de la reacción motriz.

Palabras clave: *juegos de persecución, desarrollo motriz, Test Litwin*

Abstract

The development of the process that is carried out in the different areas and is oriented to achieve an adequate and suitable development of the motor reaction capacity in the students, based on these preliminaries, the general objective was to determine the incidence of the games of persecution in the ability of motor reaction in schoolchildren of general elementary school, during the period October 2022-March 2023. A study is developed based on a methodology that combines both bibliographic research and field research in order to describe the variables and in this way, have an approach to the reality of the students who have been of vital importance at the time of carrying out this investigation. With the help of the Litwin test, it makes it possible to show that when proper planning is carried out, favorable results are achieved, therefore, at the time of execution, relevant information is received, where teachers and students with the development of activities such as are the chase games, shows a positive factor in the development of motor reaction.

Keywords: *chase games, motor development, Litwin Test*

Forma sugerida de citar (APA): López-Rodríguez, C. E., Sotelo-Muñoz, J. K., Muñoz-Venegas, I. J. y López-Aguas, N. F. (2024). Análisis de la multidimensionalidad del brand equity para el sector bancario: un estudio en la generación Z. Retos Revista de Ciencias de la Administración y Economía, 14(27), 9-20. https://doi.org/10.17163/ret.n27.2024.01.

Volumen 5. No. 3
octubre 20223
ISSN: 2773-7527

INTRODUCTION

The present research was developed based on the investigative antecedents that arise from the inquiry, review and analysis of works carried out, related to the topic of study; in this sense, some related works are presented.

A study conducted by Cando (2022), entitled (Pursuit games in the motor coordination in schoolchildren of General Basic Middle Education), for the research to be carried out, the hypothetical-deductive method has been used, on the other hand (Bonilla, 2018) mentions that the teaching - learning process in Physical Education classes is important the application of games with the aim of generating motor development. In the teaching process it is concluded that it is necessary to have stimulators that have the necessary implements and instruments so that they can be applied at the time of performing the different games, therefore, a basic guide is presented for an effective development, resulting in sociable and interactive children, so that they develop their motor skills according to their age (Bernate, 2021).

The study carried out by Paredes (2022), entitled (Didactic strategies in the motivation towards percussion games in students of General Basic Education), for the research process, a survey of information was carried out, using the hypothetical-deductive method, which was useful for the acceptance of the hypothesis proposed. With this, the author concludes that once the data collection has been carried out, the value of the motivation towards percussion games is observed, where the practice of the different types of games helps in the ludic activity as a fun process (Acosta, 2023).

Another study has been written by (Lopez, 2018) entitled ("Traditional games in the development of gross motor skills in children aged 3 to 4 years"), the aforementioned research has been developed in a descriptive way showing in this way an analysis of how gross motor skills have been developed according to actual application of traditional games, It is concluded that motor skills are part of the educational process where the child and the teacher intervene, generating experience in a significant way, which helps to develop the motor reaction capacity, therefore, these activities should be planned and structured so that they can be carried out and help the children in their learning.

On the other hand, Calucho (2022), whose study entitled "Pursuit games in gross motor skills in early education schoolchildren", the study presented by the author has been developed in a descriptive way where he shows the relevance of percussion games in the development of motor skills through physical culture classes, for which different types of percussion games have been used. The author applied a test named 3JS which helps to measure motor skills during the PRE AND POST intervention periods, for which a quantitative approach has been used to collect all relevant information, and also conducted a field research, whose study period was face-to-face, which helped to create direct links with students in order to perform the various percussion games (Moyano, 2022).

The study conducted by Villacorte (2022), entitled "The jumping in the reaction speed in the physical education class in high school students", the research topic had a qualitative approach because an analysis was made between each of the results that yielded the tests that were conducted by the author and quantitative by the fact that the Abalakov test and the Litwin test with a rating scale were used. This leads to the author's conclusion that it is important and fundamental to take interest in the fact that from an early age various motor actions are developed, such as grasping, releasing, catching, jumping, among others, being developed by the stimuli that are transmitted in the different stages of the development of life, but it has greater influence by the professionals who teach physical education and sport. (Rodríguez, 2023).

Pursuit games in the development of children, support a remarkable improvement in their daily activities, as it contributes in motor skills Platonov (2019), in addition to the "coordination of sight, touch, movements, gestures and phonetics serve as a basis for artistic activities such as modeling, painting, sculpting, playing instruments, theatrical expression or learning and performance of trades such as watchmaker, painter or surgeon" (p.59).

After reviewing the literature related to motor development, it can be mentioned that it refers to the changes produced over time in the motor behavior that reflects the interaction of the human organism with the environment. This is part of the total process of human development, having great influence on the overall development of the child, especially in the initial period of his or her life (Pedraza & Sánchez, 2018).

As has been seen, this continuous process of development of motor skills occurs in varying degrees over the months and years, and can be explained by the increase in capacity that accompanies the growth and development of the individual, as well as by that natural, undirected process that occurs by imitation, trial and error, i.e., freedom of movement. This progress is more or less independent of the facilitating attitude. Anyway, a facilitating attitude, as the case may be demonstrates a great deal of evidence, provides the opportunity to learn motor skills earlier than usual with respect to their age (Chambilla, 2016).

Thus, it is very important to support this natural process, if it is not performed correctly there is a risk of losing the opportunity for higher order progress due to lack of optimal development in basic motor skills (Camacho, 2022).

The manipulation and control of the circumstances that influence motor development and the acquisition of motor skills is called "intervention". Its main objective is to avoid

Volumen 5. No. 3
octubre 2023

ISSN: 2773-7527

the delay of motor skills by trying to adjust the progress to the right moment in which the child is able to improve, based on his or her development (which, although "marked" stages or stages within the child's development vary according to each specific child). The main problem of intervention and enrichment consists of determining what stimuli, in what proportion and at what time would be the propitious moment to offer them with the objective of optimal motor development (Rioja, 2017).

Motor development is considered as a sequential and dynamic process that occurs throughout childhood, through which humans acquire a large number of motor skills aimed at achieving physical and functional independence while the maturation of the nervous system occurs (Matos, 2021)

The development of motor skills is acquired as the central nervous system matures during the first years of life and is influenced by the factors discussed above through interaction with people, objects and environments, which can be seen on the basis of certain motor behaviors related to chronological age (Tamayo Giraldo & Restrepo Soto, 2017).

It should be taken into account that within the typical psychomotor development according to age there may be large variations that may not only be due to the inability to perform certain motor skills themselves, but also with some other factor of the environment for which the child is not developing it, such as lack of motivation, education or preferences for staying in some posture most of the day and not wanting to make postural changes. Therefore, Cabazuelo, 2016 states that development is not linear in all cases and the new changes that occur in the skills may be qualitative or quantitative.

It is known as reaction to the results of a certain action. This word is conceived as a resistance, contrary or opposing force to something. It is also the way in which an object or individual behaves in response to a specific stimulus.

The ability to react is especially important in all sports competitions, martial arts and in sports disciplines of maximum intensity and speed (speed disciplines, running, ski jumping) (Häfelinger & Schuba 2019).

Motor responses to unexpected stimuli are understood as the ability to quickly initiate and perform short, advantageous motor movements at appropriate speeds that correspond to visual, auditory, tactile or kinesthetic stimuli, and to respond to stimuli in the surrounding environment as: Speed and accuracy in making responses to received stimuli. The correct physical behavior for the corresponding motor behavior. The preparation of the sense organs for more complex or precise tasks, according to (Bonilla, 2018) mentions that "the speed of reaction: is the ability to manifest as quickly as possible to a stimulus. It is required by a speed runner to leave very quickly once the start shock of the test sounds". Therefore, the application of pursuit games was proposed as an objective to improve the development of motor reaction capacity in schoolchildren of General Basic Secondary Education.

MATERIALS AND METHODS

The population consisted of a total of 70 students of middle basic education of the Ambato Adventist Educational Unit (Unidad Educativa Adventista Ambato). Sample and sampling: Through a non-probabilistic sampling for the convenience of the researcher, a study sample of 15 students was selected, which were characterized as follows:

Variable	Male (n=9 - 60%)		Female (n=6 - 40%)		P	Total (n=15 - 100%)	
	M	±DS	M	±DS		M	±DS
Age	10,00	0,71	9,83	0,75	0,650*	9,93	0,70
Weight	33,98	8,45	34,67	7,99	0,768*	34,25	7,98
Height	1,44	0,07	1,42	0,07	0,681*	1,43	0,07

Table 1. *Characterization of the sample*

Note. *SPSS statistical analysis: mean values (M) with their standard deviations (±SD); Significant differences at P>0.05(*).*

Based on the characterization process of the study sample, it was concluded that the majority of the sample was composed of 20% more males than females.

In relation to age, the male group presents a mean value 0.17 years higher than the female group, the weight variable in the female group has a mean value 0.69 kg higher than its male counterpart and in relation to the height variable, the male group shows a mean value 0.02 cm higher than the female group, in all cases without the existence of a significant difference at a level of P>0.05, which determines a statistical equality that did not affect the research process and the results obtained.

Research techniques and instruments.

The technique to be used for the research is the survey and as an instrument the test, by means of which it was possible to evaluate and collect data on the variables analyzed.

The Litwin test was the selected instrument, which consists of:

- Drawing a line on the floor where is the student's game, two meters from the starting line diagonally as a triangle placing a circle and on the other side a square.
- The game consists of if the whistle blows once you must go out to the circle, but if the whistle blows twice you must

Volumen 5. No. 3
octubre 2023
ISSN: 2773-7527

go out to the square, this must be done in the shortest time possible so that a specific time is marked on the stopwatch.
- The rules are that you must be behind the starting line and that the stopwatch stops when you are inside the figure that has been evaluated.
- Three attempts are made and the average of these is taken.

To evaluate the level of motor reaction capacity, the specific scales for the instrument were applied, taking into account the age and sex of the person being evaluated.

Statistical treatment of the research results.

The statistical analysis of the research results was carried out using SPSS version 25 software, performing a descriptive analysis of the quantitative variables and an analysis of frequencies and percentages of the qualitative variables. In addition, a normality analysis will be performed through the Shapiro Wilk test for samples of less than 50 data, which allowed selecting the parametric T-Student and nonparametric Mann Whitney U tests for independent samples and the nonparametric Wilcoxon test for related samples that calculated the significant differences between the results by study periods.

RESULTS

Based on the research objectives, the selected instrument was applied, obtaining different results.

By means of the research instrument it was possible to record the results of each attempt made and the average value of the motor reaction capacity in seconds was calculated:

Attempts	N	Minimum	Maximum	Mean	Standard deviation
Attempts 1	15	1,8	2,64	2,2	±0,29
Attempts 2		1,89	2,54	2,13	±0,18
Attempts 3		1,86	2,52	2,12	±0,19
Valor medio		1,85	2,57	2,15	±0,21

Table 2. *Results of the initial diagnosis of motor reaction capacity in the study sample.*

The mean value calculated made it possible to determine the percentiles in which the members of the study sample were located:

CI	Percentiles	CI	Percentiles	CI	Percentiles
1	90	6	65	11	20
2	35	7	55	12	5
3	75	8	55	13	15
4	25	9	35	14	30
5	35	10	30	15	35

Table 3. *Individual percentiles of motor reaction capacity in the PRE-INTERVENTION period.*

Based on the different percentiles determined, the study sample was categorized into levels of motor reaction capacity, according to the scales established in the research methodology:

Level	Frequency	Percentaje
Low	6	40%
Medium	6	40%
High	3	20%
Total	**15**	**100%**

Table 4. *Level of motor reaction capacity in the study sample for the PRE-INTERVENTION period.*

The analysis of categorization in levels of motor reaction capacity determined that for the PRE-INTERVENTION period, it was evident that the highest percentages of the study sample were found between the "low" and "medium" levels with equal percentages with a total of 80%; only 1/5 of the study sample was found in the "high" level.

After the intervention based on pursuit games and under the application of the research instrument already described, the results of each attempt made could be recorded and the average value of the motor reaction capacity in seconds was calculated:

Attempts	N	Mínimum
Attempts 1	15	1,7
Attempts 2		1,72
Attempts 3		1,65
Average value		**1,69**

Table 5. *Results of the evaluation of the motor reaction capacity in the study sample in the POST intervention period.*

The mean value calculated allowed us to determine the percentiles in which the members of the study sample were located in the POST intervention period.

CI	Percentiles	CI	Percentiles	CI	Percentiles
1	90	6	90	11	20
2	55	7	75	12	65
3	80	8	85	13	65
4	55	9	75	14	30

Volumen 5. No. 3
octubre 2023

ISSN: 2773-7527

5	60	10	60	15	70

Table 6. *Individual percentiles of motor reaction capacity in the POST intervention period.*

Based on the different percentiles determined, the study sample was categorized into levels of motor reaction capacity for the POST intervention period, according to the scales established in the research methodology described above:

Level	Frequency	Percentaje
Low	1	6,70%
Medum	4	26,70%
High	10	66,70%
Total	**15**	**100%**

Table 7. *Level of motor reaction capacity in the study sample POST intervention period.*

The analysis of categorization into levels of motor reaction capacity determined that for the POST intervention period, it was evident that the highest percentage of the study sample was at a "high" level with more than 60% of the sample, a little more than ¼ of the sample was at a "medium" level and only one member of the sample was at a "low" level.

Level of learning PRE	Level of learning POST			Total
	Low	Medium	High	
Low	1	2	3	**6**
Medium	0	2	4	**6**
High	0	0	3	**3**
Total	**1**	**4**	**10**	**15**

Table 8. *Cross analysis between levels of motor reaction capacity by periods in the study sample.*

The respective analysis showed that for the PRE-INTERVENTION period, in the "low" level there were 6 members of the study sample, of which 1 remained in the "low" level for the POST intervention period, 2 changed to a "medium" level and 3 to a "high" level; in the same period, in the "medium" level there were 6 members, of which only 2 remained in the same level for the POST intervention period and 4 changed to a "high" level. The 3 members of the sample who were at a "high" level in the PRE-INTERVENTION period did not change their level in the POST INTERVENTION period.

CONCLUSIONS

The initial level of motor reaction capacity was diagnosed in the middle school students during the period October 2022-March 2023, showing that the highest percentages of the study sample were between the "low" and "medium" levels with equal percentages with a total of 80%; only 1/5 of the study sample was found at a "high" level.

The level of motor reaction capacity after the application of chase games in middle school students was evaluated, showing that the highest percentage of the study sample was at a "high" level with more than 60% of the sample, a little more than ¼ of the sample was at a "medium" level and only one member was at a "low" level.

The difference between the initial level of the motor reaction capacity and after the intervention of the pursuit games in middle school students was analyzed, showing positive modifications of levels between the periods, a descriptive difference that evidences the improvement of the capacity under study and a statistical support that evidences the incidence of the pursuit games in the motor reaction capacity.

AUTHORS' CONTRIBUTIONS

The contribution made by all the authors in the study was fundamental: Jhon Daniel Sánchez Calderon; Dennis José Hidalgo Alava; Washington Ernesto Castro Acosta; Verónica Cevallos.

ACKNOWLEDGMENTS

The authors would like to thank the Universidad Técnica de Ambato (UTA) and the Dirección de Investigación y Desarrollo (DIDE) for their support for this work.

BIBLIOGRAPHIC REFERENCES

Acosta Rojas, S. J. (2023). Actividades lúdicas y su incidencia en el aprendizaje en estudiantes del quinto año de EGB de la UE "Juan E. Verdesoto", Babahoyo. 2022 (Bachelor's thesis, BABAHOYO: UTB, 2023).

Bernate, J. (2021). Educación Física y su contribución al desarrollo integral de la motricidad. Podium. Revista de Ciencia y Tecnología en la Cultura Física, 16(2), 643-661.

Bonilla, J. A. M., Ortiz, P. G. O., Zapata, E. G., & Zúñiga, A. V. C. (2018). Efectos de un programa de intervención en la motricidad gruesa: estudio con niños de 5 a 7 años. Ciencia Digital, 2(2), 64-78.

Bonilla, J. I. (2018). La velocidad de reacción en los desplazamientos técnicos del árbitro profesional de fútbol. Ambato: Universidad Técnica de Ambato.

Cabezuelo, G., & Frontera, P. (2016). El desarrollo psicomotor: Desde la infancia hasta la adolescencia (Vol. 187). Narcea Ediciones.

Volumen 5. No. 3
octubre 2023

ISSN: 2773-7527

Calucho Hualpa, D. S. (2022). Juegos de persecución en la motricidad gruesa en escolares de Educación Inicial (Bachelor's thesis, Carrera de Pedagogía de la Actividad física y deporte).

Camacho Velázquez, E. J. (2022). Habilidades motrices que se favorecen mediante la iniciación deportiva en un grupo de 6° año de primaria.

Cando Lara, R. S. (2022). Los juegos de persecución en la coordinación motora en escolares de Educación General Básica Media. Ambato: Universidad Técnica de Ambato.

Chambilla Mollinedo, O. (2016). Estimulación temprana y el desarrollo de habilidades motoras en niños y niñas de 5 años de la Institución Educativa Inicial Particular el Buen Pastor, Puno 2016.

Häfelinger, U., & Schuba, V. (2019). La coordinación y el entrenamiento propioceptivo (bicolor). Paidotribo.

López Velasco, E. F. (2018). "Los juegos tradicionales en el desarrollo de la motricidad gruesa en niños y niñas de 3 a 4 años". Ambato: Universidad Técnica de Ambato.

Matos Camac, R. M. (2021). Desarrollo motor en niños de 4 a 7 años de la Institución Educativa Sonrisas y Colores en clases virtuales.

Moyano Jiménez, S. E. (2022). Análisis de la valoración de la motricidad gruesa postpandemia realizado con el test de coordinación motriz 3JS en niños y niñas de educación primaria de 6 a 11 años que asisten a la Unidad Educativa Particular Cristiano Verbo, en el periodo de septiembre–diciembre del 2022 (Bachelor's thesis, Quito: UCE).

Paredes Bayas, J. A. (2022). Estrategias didácticas en la motivación hacia los juegos tradicionales en estudiantes de Educación General Básica. Ambato - Ecuador: Universidad Técnica de Ambato.

Pedraza Espinosa, E. A., & Sánchez Rivera, C. (2018). Etapas Desarrollo Y Habilidades Motrices Infancia (7 a 12 Años).

Platonov, V. (2019). Desarrollo motor y teoría del entrenamiento deportivo olímpico.

Rioja Barberis, A., Vial Vicente, F., Ruff Cano, N., & Lecler Maturana, V. (2017). Actividades y estrategias utilizadas por las educadoras de párvulos destinadas al desarrollo de habilidades motoras básicas en la etapa preescolar (Doctoral dissertation, Universidad Andrés Bello).

Rodríguez García, M. B. (2023). La importancia de diseñar y ejecutar la planeación didáctica por porte de los docentes con formación en educación física que se encuentran frente a grupo en las primarias de la zona escolar n° 33 en el municipio de Jiutepec, Morelos.

Tamayo Giraldo, A., & Restrepo Soto, J. A. (enero-junio de 2017). El juego como mediación pedagógica en la comunidad de una institución de protección, una experiencia llena de sentidos. Revista Latinoamericana de Estudios Educativos, 13(1), 105-128. Recuperado el 20 de octubre de 2022, de https://www.redalyc.org/pdf/1341/134152136006.pdf

Villacorte Guevara, K. A. (2022). La saltabilidad en la velocidad de reacción en la clase de Educación Física en estudiantes de Bachillerato (Bachelor's thesis, Carrera de Pedagogía de la Actividad física y Deporte).