PODIUM
Journal of Science and Technology in Physical Culture
SCIENTIFIC PUBLICATIONS DEPARTAMENT

Volumen 16
Issue 3
2021

University of Pinar del Río "Hermanos Saíz Montes de Oca"

Director: Fernando Emilio Valladares Fuente

Email: fernando.valladares@upr.edu.cu

ISSN: 1996–2452 RNPS: 2148
PODIUM Journal, September-December 2021; 16(3):934-946

UNIVERSIDAD DE PINAR DEL RÍO
HERMANOS SAÍZ MONTES DE OCA

PODIUM
REVISTA DE CIENCIA Y TECNOLOGÍA EN LA CULTURA FÍSICA

Translated from the original in spanish

Original article

Development of Motor skills: an application of the micro curricular active learning model

Desarrollo de la motricidad: una aplicación del modelo de aprendizaje microcurricular activo

Desenvolvimento motor: uma aplicação do modelo de aprendizagem micro-curricular ativa

María Gladys Cóndor Chicaiza[1*] https://orcid.org/0000-0001-6500-3454

Jannet Del Rocío Cóndor Chicaiza[2] https://orcid.org/0000-0001-6209-4135

Susana Paz Viteri[3] https://orcid.org/0000-0001-9240-1941

Milton Fernando Romero Obando[4] https://orcid.org/0000-0003-0770-2171

Laura Cristina Barba Miranda[5] https://orcid.org/0000-0002-6902-8066

[1]Unidad Educativa Antonio José de Sucre. Ecuador.
[2]Eugenio Espejo Municipal Educational Unit. Ecuador.
[3]National University of Chimborazo. Ecuador.
[4]Technical University of Cotopaxi. Ecuador.
[5]Pedagogica Ministry of Education of Ecuador. Ecuador.

[*]Author for correspondence: gladyscondor6@gmail.com

Received: 07/06/2021.
Approved: 19/06/2021.

How to cite ítem: Cóndor Chicaiza, M., Cóndor Chicaiza, J., Paz Viteri, S., Romero Obando, M., & Barba Miranda, L. (2021). Development of motor skills: an application of the micro curricular active learning model/Desarrollo de la motricidad: una aplicación del modelo de aprendizaje microcurricular activo. *PODIUM - Journal of Science and Technology in Physical Culture, 16*(3), 934-946. https://podium.upr.edu.cu/index.php/podium/article/view/1149

ABSTRACT

The Physical Education classes developed in this pandemic have generated that teachers look for new teaching alternatives that can be contextualized with virtual resources. The objective of this research is to apply the Active Microcurricular Learning Model of Physical Education in children from 5 to 6 years old, belonging to the first year of General Basic Preparatory Education of a private school in the city of Quito. This proposal was designed to check if it significantly influences the development of gross motor skills. A quasi-experimental design study was carried out with pre and post-test measures without control group, cross-sectional, descriptive, analytical and comparative, in a population formed by 22 children as experimental group, distributed in 11 boys and 11 girls. It was applied in the first half of the 2020-2021 school year, through virtual classes by Zoom; the pretest was carried out in the first week of September and the posttest in the third week of January, with the Mc. Clenaghan and Gallahue battery and the Ozerestky battery of infantile motor skills. It was concluded that there are significant variations in the elements of gross motor skills, such as: running, climbing, crawling and jumping. Statistically, it was demonstrated that the application of this model is effective according to the results obtained and that it is of great importance to develop gross motor skills; in addition, virtual resources can be used in Physical Education classes, empowering them for life in each of their daily activities.

Keywords: Curriculum; Physical Education; Methodology; Motor skill.

RESUMEN

Las clases de Educación Física desarrolladas en esta pandemia han generado que los docentes busquen nuevas alternativas de enseñanza que se puedan contextualizar con los recursos virtuales. El objetivo de esta investigación es aplicar el Modelo de Aprendizaje Microcurricular Activo de Educación Física en niños de 5 a 6 años, pertenecientes al primer año de Educación General Básica Preparatoria de una escuela particular de la ciudad de Quito. Esta propuesta se diseñó para comprobar si influye significativamente en el desarrollo de la motricidad gruesa. Se realizó un estudio con diseño cuasiexperimental con medidas pre y post*est* sin grupo control, de corte transversal, descriptivo, analítico y comparativo, en población conformada por 22 niños como grupo experimental, distribuidos en 11 niños y 11 niñas. Se aplicó en la primera mitad del año lectivo 2020-2021, por medio de clases virtuales por Zoom; el pretest se realizó en la primera semana de septiembre y el postest en la tercera semana de enero, con la batería de Mc. Clenaghan y Gallahue y la batería de Ozerestky de motricidad infantil. Se concluyó que existen variaciones significativas en los elementos de la motricidad gruesa, como son: correr, trepar, reptar y saltar. Estadísticamente, quedó demostrado que la aplicación de este modelo es eficaz según los resultados obtenidos y que es de gran importancia para desarrollar la motricidad gruesa; además, que se pueden utilizar recursos virtuales en las clases de Educación Física, potencializándolas para la vida en cada una de las actividades de su diario vivir.

Palabras clave: Currículo; Educación Física; Metodología; Motricidad.

RESUMO

As aulas de Educação Física desenvolvidas nesta pandemia levaram os professores a procurar novas alternativas de ensino que podem ser contextualizadas com recursos virtuais. O objetivo desta pesquisa é aplicar o Modelo Ativo de Aprendizagem

Microcurricular para Educação Física em crianças de 5 a 6 anos de idade, pertencentes ao primeiro ano da Educação Preparatória Básica Geral em uma escola pública da cidade de Quito. Esta proposta foi projetada para testar se ela tem uma influência significativa no desenvolvimento das habilidades motoras brutas. Foi realizado um estudo de projeto quase-experimental com medidas pré e pós-teste sem grupo de controle, um estudo transversal, descritivo, analítico e comparativo, em uma população de 22 crianças como grupo experimental, distribuídas em 11 meninos e 11 meninas. Foi aplicado na primeira metade do ano escolar 2020-2021, por meio de aulas virtuais Zoom; o pré-teste foi realizado na primeira semana de setembro e o pós-teste na terceira semana de janeiro, com a bateria Mc. Clenaghan e Gallahue e a bateria Ozerestky de habilidades motoras infantis. Concluiu-se que existem variações significativas nos elementos das habilidades motoras brutas, como correr, escalar, rastejar e pular. Estatisticamente, foi demonstrado que a aplicação deste modelo é eficaz de acordo com os resultados obtidos e que é de grande importância para o desenvolvimento das habilidades motoras brutas; além disso, os recursos virtuais podem ser utilizados nas aulas de Educação Física, tornando-os mais potentes para a vida em cada uma das atividades da vida diária.

Palavras-chave: Curriculum; Educação Física; Metodologia; Motricidade.

INTRODUCTION

The pandemic caused by Covid-19 has caused much havoc in education, especially in Physical Education, due to the fact that this subject needs presence in order to develop all motor, cognitive, social and emotional abilities and skills according to the psychomotor development of students from 5 to 18 years old in educational institutions (Posso *et al.,* 2020c). Contributing to this thought, Mosquera (2020) mentions that Physical Education is framed in the development of motor skills appropriate for each age, which serves to integrate and contribute to an increasingly active and healthy society.

In this sense, Ecuadorian Physical Education teachers saw the need to be updated and trained in new learning methodologies and the use of virtual tools, as Posso Pacheco *et al.* (2021a) state, when referring to Covid-19 "(...) in the field of education, it has been a great opportunity for teachers to be updated in active methodologies and uses of computer tools, being aware of the new role of the teacher, especially in Physical Education" (p.32).

On the other hand, Physical Education teachers have had to integrate to the provisions of the educational authorities of Ecuador, which guide the use of active methodologies, applied in interdisciplinary learning projects, under the guidelines of a curriculum prioritized for the health emergency. Based on this idea, the Ministry of Education (2020) suggests the use of several active methodologies adapted to each sublevel and educational level to guarantee the learning outcomes of students and ensure the achievement of the Ecuadorian high school graduate profile.

According to Posso Pacheco *et al.,* (2021b), cooperative learning has been mostly massified in Ecuadorian Physical Education since the issuance of the 2016 curriculum, which maintains a social constructivist line. In the pandemic, project-based learning, challenge-based learning and different active methodologies have been worked, which guarantee learning in a context of remote education, caused by the global pandemic situation.

With the range of possibilities regarding the use of active methodologies in the area of Physical Education, the *Active Microcurricular Learning Model* proposed by Posso *et al.* (2020) is mentioned as a proposal for classroom planning, which can be adapted to any context and content, since it follows the same guidelines of the Ecuadorian Physical Education curriculum, which allows maintaining flexibility and openness in order to apply skills with performance criteria, disaggregated and graded.

The *Active Microcurricular Learning Model of Physical Education* is adjusted to remote education, because the active methodological strategies proposed in the three phases of this model: opening, development and closing, do not deviate from the requirements of working with virtual resources.

By linking the four moments of phase 1 *Opening* with the development of a Virtual Physical Education class, the organization of groups in channels or rooms can be proposed, depending on the platform; these groups should be heterogeneous and should be composed of no more than seven students.

In the second moment, prior knowledge should be presented, depending on the skills with performance criteria to be developed in class, i.e., videos, images, sounds, readings, among others, should be presented in order to remember or relive the experience lived or communicated of the curricular content or contents to be developed.

In the third moment, the objective of the class should always be mentioned by the teacher as a challenge to be met, accompanied by motivational phrases, images or songs to awaken the interest to continue under the same purpose of the group or the class.

And finally, a fourth moment in which an activation game is played to replace the famous warm-up; this game should be, if possible, designed to be played alone, without the accompaniment of a family member, in a small space and standing in front of the electronic device; this game should always be accompanied by music that sets the rhythm of the activity; if possible, the teacher should consider the structure so that the students can contextualize it to the environment where they receive the classes.

Phase 2 *Development of the Active Microcurricular Learning Model* proposes two moments, which stand out because it is where the student acquires motor, cognitive, social and affective learning, depending on the skills with performance criteria planned for that class. In addition, the teacher must consider adapting the teaching to the conditions of space, material, accompaniment, autonomy and motivation that the student has at home or place where he/she receives the class (Posso, 2018).

The fifth moment, called *Challenge*, will allow the adapted addressing mentioned in the previous paragraph, that is to say, the teacher must take into account how to structure the learning challenge for the construction and group fulfillment of knowledge, in the context of each member of the established group. Undoubtedly, this challenge should be presented in spoken, written, image or any other form, depending on the age, linking virtual resources to motivate compliance.

In the sixth moment called *Development*, the students gathered in a group should understand the challenge; this can be done with a simple conversation among the members of the group, the teacher must ensure that the challenge is understood; for this, he/she could use additional resources such as a video, a presentation or the formulation of questions through any application or platform.

Once the group is clear about the challenge to be constructed, the teacher will pose guiding questions that orient or direct the solution of the challenge, without forgetting the contextualization of these questions to the limitations that arise at work, at home; this will depend on the age and the difficulty of the curricular content to be developed; however, it is advised that the students can ask these questions; for this, the age and the development of thinking skills that the students have should be taken into account.

All work will have to be built and with the contribution of all students, under the same common objective, which is learning; they will build it with trial and error, it should be remembered that the proposals of each one are fundamental, as well as the guidance and accompaniment of the teacher. It is possible that a member of the family or a person who lives with the student can support him/her without influencing the construction, but as a guide for the teacher, remembering that from remote education the people who live at home should be part of the class planning.

The virtual tools or resources that teachers use for the construction of the exercise or activity will depend on the learning they want to obtain, but it can be advised that the less technology is used for this purpose, the better, because a means of contact is already being used, such as the zoom platform, team, meet, among others, and this generates, together with the limitations at home, frustration and demotivation.

Finally, in phase three, *Closure*, it is proposed to generate student autonomy through self-evaluation and co-evaluation, with the students themselves providing feedback, emphasizing follow-up at all times and ending with the teacher's feedback. At this moment, it is proposed the retro-planning or change of the methodological structure of teaching if necessary, so that it adjusts to the type of learning of the students and to the context or reality of their lives.

In this sense, during the pandemic, Physical Education teachers faced real challenges in choosing the best teaching methodology, aligned to the application of virtual resources to ensure student learning. It should be noted that teachers should not lose the perspective of the quality of the educational relationship, which depends on their capacity, that is, through training so that they can strengthen the development of children (Posso, *et al.,* 2020b).

Teachers who approach the preparatory sub-level or first year must consider that they are dealing with children between five and six years of age, who need special attention because this is one of the most important evolutionary periods (Lázaro, 2000). Children relate to the environment through the careful design of body plans, temporal and spatial perceptions, and sports activities according to the spontaneous needs and interests of each child.

In this sense, Physical Education teachers should focus on resolving individual differences through the implementation of innovative and creative learning strategies to fully consider children's coordination and control of movements (such as running, walking or motor skills), in order to fully develop their psychomotor skills. Coordination problems are often related to reading and writing defects. Rigal (2006) states that, in the context of primary education, because there is little stimulation of the nervous system, children are affected in running, jumping, painting, climbing, grasping, etc.

Teachers who teach these ages students should plan goals based on the development and use of innovative and creative strategies to optimize children's motor skills because teaching practice always begins with the children's knowledge of what they plan to learn (Ardanaz, 2009).

However, people have paid attention to abnormal movements, especially when performing activities such as running, jumping, rolling, climbing, balancing and coordinating early childhood activities. Therefore, if this situation of children is not corrected, it will lead to the non-autonomy of movement; thus, they will not be able to explore, discover and play a role in their surrounding environment, so, it will be a worrying situation of learning disabilities.

With respect to this reality, it is proposed to apply the *Active Microcurricular Learning Model* in children from five to six years old, belonging to the first year of General Basic Preparatory Education of a private school in the city of Quito, in order to check if it significantly influences the development of gross motor skills.

MATERIALS AND METHODS

The study corresponds to a quasi-experimental design with pre- and post-test measures, without control group, cross-sectional, descriptive, analytical and comparative; the population is composed of 22 children from 5 to 6 years of age in the first year of General Basic Preparatory Education of a private educational institution in the city of Quito. In the same order, the sample was constituted by twenty-two (22) as a unique and experimental group, distributed in 11 boys and 11 girls.

Prior to the research, an informed consent form was signed with the legal representatives of the 22 children, in which the objective of the research and the principle of anonymity with confidentiality of the data were indicated; in addition, the collaboration of the authorities and the Physical Education teacher for the study was previously expressed.

The purpose of the research was to determine the effect of the *Active Microcurricular Learning Model* to develop the gross motor skills of boys and girls aged 5 and 6 of the first year of General Basic Preparatory Education; the data needed to achieve these objectives are reflected in the aspects of gross motor skills (running, climbing, crawling and jumping). Therefore, the direct observation technique was used and as an instrument a Pretest and a Posttest of Mc. Clenaghan and Gallahue's battery, observations and motor patterns and Ozerestky's battery of infantile motor skills, which is registered in a checklist, were used.

The application of the *Microcurricular Learning Model* was applied in the five-year period of the school year 2020-2021, from September 2020 to January 2021, through virtual classes directed through the Zoom platform of the mentioned educational institution; the pretest was conducted in the first week of September and the posttest in the third week of January. The skills with performance criteria or Physical Education learning were contextualized to the space, resources and availabilities available in the students' homes, addressed in a remote education caused by Covid-19.

In the same order, for descriptive statistics, the calculation of correlation (Spearman's coefficient) between the aspects of gross motor skills analyzed, internal consistency (Cronbach's alpha) and differences based on gender were performed. The normality test (Shapiro-wilk) shows a normal distribution, parameter tests were performed to compare differences between variables Practical Activities Guide and Gross Motor skills (independent samples t-Student) for the pre-intervention test and the t-Student test for related samples for the pre- and post-intervention comparison. The significance level was set at $p \leq 0.05$ for the different tests.

RESULTS AND DISCUSSION

Before the intervention

Table 1 shows the descriptive statistics (mean and standard deviation), scores obtained in the aspects of gross motor skills studied and the degree of correlation between them. This relationship shows an internal consistency in the Running factor a Cronbach's Alpha (α)= 0.957, in the Climbing factor (α)= 0.996, in the Crawling factor an (α)= 0.995 and for the Jumping factor an (α)= 0.956 (Table 1).

Table 1. - Statistics: Mean (M), Standard Deviation (SD), Kurtosis (Kurtosis), Skewness (Skewness), Cronbach's Alpha and correlations between the aspects of gross motor skills analyzed

	M	DE	Curt.	Asim.	α	1	2	3	4
Running (1)	2,95	0,90	-0,55	0,53	0,980	1			
Climbing (2)	2,05	0,79	0,86	-0,73	0,996	0,340**	1		
Crawling (3)	2,18	0,80	-1,29	-0,35	0,995	0,212**	0,139**	1	
Jumping (4)	2,36	1,05	0,81	-0,83	0,956	0,221**	0,557**	0,031**	1

**Correlation is significant at the 0.01 level (bilateral).

In the same order, a significant, positive and moderate correlation is observed between the aspects of gross motor skills, where the correlation between the aspects Jumping and Climbing (0.557) and the aspects Climbing with Running (0.340) is emphasized. In another particular, the significant, positive and low correlation is observed between the aspects of the aspects of Crawling with Jumping (0.212) and Climbing (0.139). Likewise, the aspect Jump with Running (0.221) and with Crawling (0.031). It should be noted that all six values are higher than the neutral level of significance; this allows us to conclude that there is a significant, positive and moderate correlation between the aspects of gross motor skills studied.

Table 2 shows the independent tests according to gender; it shows that there is no statistically significant difference between the aspects studied for both sexes. The male gender obtained average scores above the female gender, although very close (Table 2).

Table 2. - Aspects of gross motor skills according to gender

	Female(11)		**Male(11)**			
	M	DE	M	DE	t	p
Running	2,91	0,83	3	1	-0,232	0,821
Climbing	1,91	0,94	2,18	0,60	-0,820	0,432
Crawling	2,09	0,70	2,27	0,90	-0,516	0,617
Jumping	2,27	1,01	2,45	1,13	-0,430	0,676

After the intervention

The following is a descriptive analysis of the results obtained based on the treatment with the *Active Microcurricular Learning Model* in the applied instrument, taking into account the global character of the sample and its statistical significance (p) in all aspects of gross motor skills analyzed.

General Pretest/Posttest analysis of Basic Motor Skills

Table 3 shows the values before and after treatment, which allow us to affirm that there was a significant increase in the means of the aspects of gross motor skills analyzed after treatment, based on the *Active Microcurricular Learning Model* (Table 3).

Table 3. - General Pretest-Posttest of the Gross Motor Skills Aspects Analyzed

	Pretest		**Posttest**			
	M	DE	M	DE	t	p
Running	2,95	0,90	4,91	0,29	-10,864	0,000
Climbing	2,05	0,79	3,05	0,90	-5,066	0,000
Crawling	2,18	0,80	3,27	0,88	-5,896	0,000
Jumping	2,36	1,05	4,50	1,10	-12,021	0,000

Pretest/Posttest gender analysis of Basic Motor Skills

Considering the results shown in Tables 4 and 5, it is affirmed that, according to gender, there was a significant increase in the means of the gross motor skills aspects analyzed, both in the female and male groups, after the treatment based on the *Active*

Microcurricular Learning Model. The fact that in the climbing aspect for the female group there was an increase, but not significant (p= 0.070), stands out (Table 4 and Table 5).

Table 4. - Female Pretest-Posttest of the Aspects of Gross Motor Skills Analyzed

	Pretest		Posttest			
	M	DE	M	DE	t	p
Running	2,91	0,83	4,91	0,30	-8,563	0,000
Climbing	1,91	0,94	2,64	1,03	-2,025	0,070
Crawling	2,09	0,70	3,36	1,03	-5,369	0,000
Jumping	2,27	1,01	4,73	0,90	-11,840	0,000

Table 5. - Male Pretest-Posttest of the Aspects of Gross Motor Skills Analyzed

	Pretest		Posttest			
	M	DE	M	DE	t	p
Running	3,00	1,00	4,91	0,30	-6,708	0,000
Climbing	2,18	0,60	3,45	0,52	-9,037	0,000
Crawling	2,27	0,90	3,18	0,75	-3,194	0,010
Jumping	2,45	1,13	4,27	1,27	-6,901	0,000

DISCUSSION

The research was based on the hypothesis that suggests the variation of gross motor development in its aspects: Running, Climbing, Crawling and Jumping with the application of the *Active Microcurricular Learning Model* (Posso, *et al.,* 2020a), in five and six year old children of the first year of General Basic Preparatory Education. The descriptive analysis of the data obtained through the *tests* determined that there was a significant increase in the average mean scores for the variables running, climbing, crawling and jumping related to gross motor skills, both in the analysis by gender and overall, agreeing with Mora and Palacios (1991), likewise with Ruiz (2015), in the sense that children, when subjected to a practice based on movement, dance, sport and play, achieve significant changes in visuoperceptive skills and motor skills, both fine and gross, finding a high correlation between these variables.

This increase is due to what happened in each of the aspects related to gross motor skills: running, climbing, crawling and jumping, as stipulated by Sánchez (2015) who agrees in affirming that among the aspects or indicators, which form gross motor skills, are the locomotor movements or automatism, also called the large body movements, which are defined as gross movements and elements that form in function to the body

as a whole, which is the same, the whole body participates, such as: walking, crawling, running and climbing.

Additionally, gross motor skills are developed through dynamic motor coordination, which is the ability to harmonize the movements of different parts of the body, which means the opportunity and ability to synchronize through the coordinated movement of different parts of the body, divided in time, space and effort, allowing the learning and mastery of more complex movements.

With this understanding, the inferential analysis of the study was performed to determine the level of the relationship between the application of the *Active Microcurricular Learning Model and the* development of Gross Motor Skills; the results show a significance Sig. (2-tailed) lower than the significance level proposed for the analysis, i.e., it is statistically established that there is a significant relationship between the development of the aspects analyzed and the pedagogical intervention based on the auxiliary applied with a high level of confidence.

Given the above, it can be said that psychomotor skills can only facilitate the necessary learning of other aspects of education and bodily action, which is no less important to achieve the psychosomatic balance of the child (Jung, 2010).

As a conclusion of this work, it was determined that, in the group of children, which was submitted to the *Active Microcurricular Learning Model,* there are significant variations in the elements of gross motor skills, such as running, climbing, crawling and jumping. Statistically, it was demonstrated that this model applied to children aged five and six years old in the first year of General Basic Preparatory Education is effective, according to the results obtained, and that it is of great importance for the development of gross motor skills.

It can also be highlighted that the *Active Microcurricular Learning Model* can be developed with virtual resources in a Physical Education class, the contextualization is the responsibility of the teacher, that is, the teacher is the one who can align the curricular content to the needs and requirements of students of these ages, enhancing gross motor skills for life in each of the activities performed at home as a guarantor element of the correct psychomotor development of students in this time of pandemic.

REFERENCES

Ardanaz, T. (2009). La psicomotricidad en Educación Infantil. Revista Innovación y experiencias educativas, (16). 1-10. https://archivos.csif.es/archivos/andalucia/ensenanza /revistas/csicsif/revista/pdf/Numero_16/TAMARA_ARDANAZ_1.pdf

Jung, V. (2010). De motorische kip ofhetmotorischeei? "Ismotorischec oördinatieeenvoorspeller van sport participatie in het lager onderwijs". Universiteit Gent, Holanda.

Lázaro, A. (2000). *Nuevas experiencias en educación psicomotriz*. Zaragoza: Mira editores.

Ministerio de Educación. (2020). *Currículo Priorizado para la Emergencia*. Quito: Ministeriode Educación. https://recursos2.educacion.gob.ec/wp-content/uploads/2020/08/Curr%C3%ADculo-Priorizado-para-la-Emergencia-2020-2021-1.pdf

Mora, J. y Palacios, J. (1991). *Desarrollo físico y psicomotor a lo largo de los años preescolares. En: Psicología del desarrollo*. La Habana, Editorial Félix Varela.

Mosquera, A. P. (2020). Desarrollo educativo de la educación física en el departamento del choco en la última década. *Revista Edu-Física, 12*(26), 1- 12. http://revistas.ut.edu.co/index.php/edufisica/article/view/2282

Posso, R. (2018). *Guía de estrategias metodológicas para Educación Física. Quito: Ministerio de Educación*. https://educacion.gob.ec/wp-content/uploads/downloads/2019/01 /GUIA-METODOLOGICA-EF.pdf

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

Posso Pacheco, R., Otáñez Enríquez, J., Paz Viteri, S., Ortiz Bravo, N. y Núñez Sotomayor, L. (2020b). Por una Educación Física Virtual en Tiempos de COVID. *PODIUM-Revista de Ciencia y Tecnología en la Cultura Física, 15*(3). http://podium.upr.edu.cu/index.php/podium/article/view/1002

Posso Pacheco, R. J., Barba Miranda, L. C., León Quinapallo, X. P., Ortiz Bravo, N. A., Manangón Pesantez, R. M., & Marcillo Ñacato, J. C. (2020c). Educación Física significativa: propuesta para la contextualización de contenidos curriculares. *Podium. Revista de Ciencia y Tecnología en la Cultura Física, 15*(2), 371-381. http://podium.upr.edu.cu/index.php/podium/article/view/914

Posso Pacheco, R., Barba Miranda, L., Marcillo Ñacato, J. y Beltrán Vásquez, S. (2021a). Educación Física Interdisciplinaria ecuatoriana en el contexto de la covid-19. *Acción, 17*. http://accion.uccfd.cu/index.php/accion/article/view/154

PossoPacheco, R., Otáñez Enríquez, N., Cóndor Chicaiza, J., Cóndor Chicaiza, M. y Lara Chala, L. (2021b). Educación Física remota: juegos motrices e inteligencia kinestésica durante la pandemia COVID-19. *PODIUM -Revista de Ciencia y Tecnología en la Cultura Física, 16*(2), 564-575. https://podium.upr.edu.cu/index.php/podium/article/view/1096

Rigal, R (2006) *Educación Motriz Y Educación Psicomotriz En Preescolar Y Primaria*. España: Editorial INDE.

Ruiz, L.M. (2015*). Evaluación de la coordinación corporal y Competencia Motriz. Elementos para comprender el aprendizaje motor en educación física escolar*. Madrid, Gymno.

Sánchez, A. (2015). Fortalecimiento de las habilidades básicas motoras correr, saltar y lanzar en niños de 6 a 11 años del municipio de Guateque, a través de la Educación Física en ambientes extraescolares. http://repositorio.pedagogica.edu.co/handle/20.500.12209/2771

Conflict of interest:
The authors declare that they have no conflicts of interest.

Authors' contribution:
María Gladys Cóndor Chicaiza: Conception of the idea 100 %, search and review of literature 80 %, preparation of instruments 80 %, application of instruments 80 %, collection of information resulting from the instruments applied 80 %, statistical analysis 80 %, preparation of tables, graphs and images 80 %, preparation of database 100 %, general advice on the subject matter addressed 90 %, correction of the article 70 %, authorship coordinator 100 %, translation of terms or information obtained 70 %, review of the application of the bibliographic standard applied 70 %.

Jannet Del Rocío Cóndor Chicaiza: Literature search and review 10 %, application of instruments 5 %, compilation of the information resulting from the applied instruments 5 %, statistical analysis 5 %, preparation of tables, graphs and images 5 %, correction of the article 5 %, translation of terms or information obtained 5 %, review of the application of the applied bibliographic standard 5 %, revision and final version of the article 50 %.

Susana Paz Viteri: Literature search and review 10 %, application of instruments 5 %, compilation of the information resulting from the applied, instruments 5 %, statistical analysis 5 %, preparation of tables, graphs and images 5 %, correction of the article 5 %, translation of terms or information obtained 5 %, review of the application of the applied bibliographic standard 5 %, revision and final version of the article 50 %.

Milton Fernando Romero Obando: Literature search and review 5 %, preparation of instruments 5 %, application of instruments 5 %, compilation of the information resulting from the instruments applied 5 %, general advice by the thematic approached 5 %, correction of the article 5 %, translation of terms or information obtained 5 %, review of the application of the bibliographic standard applied 5 %, writing of the original (first version) 50 %.

Laura Cristina Barba Miranda: Literature search and review 5 %, preparation of instruments 5 %, application of instruments 5 %, compilation of the information resulting from the instruments applied 5 %, general advice on the topic addressed 5 %, correction of the article 5 %, translation of terms or information obtained 5 %, review of the application of the bibliographic standard applied 5 %, writing of the original (first version) 50 %.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license
Copyright (c) María Gladys Cóndor Chicaiza, Jannet Del Rocío Cóndor Chicaiza, Susana Paz Viteri, Milton Fernando Romero Obando, Laura Cristina Barba Miranda