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Personalized Articulation between Metacognition and Self-Exercise: A Customized Method from University Physical Education

Articulación personalizada entre metacognición y auto-ejercitación. Un método personalizado desde la Educación Física universitaria

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ABSTRACT

Self-exercise is understood and applied in various ways throughout the world. Its conception is determined by its structure, rules and procedures. The objective of the present study was to suggest a method of personalized articulation between metacognition and self-exercise to promote the formation of habits of practicing physical exercises during class in university students. The methodology is mixed, with an experimental design. The population was 55 students belonging to the first and second year of the Bachelor's Degree in Education, Pedagogy – Psychology. A sample of 30 students was intentionally selected. The result constituted a contribution to the context of University Physical Training, where the teacher methodological performance, the student physical and cognitive performance and the autonomy to practice exercise stand out. It was concluded that the study favors a way to teach self-exercise in university students taking the psychological, procedural and attitudinal dimensions as a driving element.

Keywords: Physical education; University; Self-Exercise; Custom Articulation; Physical Exercise; Metacognition.

ABSTRACT

La auto-ejercitación se entiende y aplica de diversas maneras en todo el mundo. Su concepción está determinada por su estructuración, normas y procedimientos. El objetivo del presente estudio fue proponer un método de articulación personalizada entre la metacognición y la auto-ejercitación para propiciar en el estudiante universitario la formación de hábitos de la práctica de ejercicios físicos durante la clase. La metodología es mixta, con un diseño experimental. La población fue de 55 estudiantes pertenecientes al primero y segundo año de la carrera de Licenciatura en Educación Pedagogía–Psicología. Se seleccionó de forma intencional, una muestra de 30 estudiantes. El resultado constituyó un aporte para el contexto de la Educación Física universitaria, donde se destaca el desempeño metodológico del docente, el desempeño físico y cognitivo del estudiante y la autonomía para la práctica del ejercicio. Se concluyó que el estudio favorece una vía para la enseñanza de la auto-ejercitación en el estudiante universitario tomando como elemento conducente las dimensiones psicológicas, procedimental y actitudinal.

Palabras clave: Educación Física; Universidad; Auto-Ejercitación; Articulación Personalizada; Ejercicio Físico; Metacognición.

INTRODUCTION

University Physical Training, in terms of the integral development of the individual, works on various aspects of personality beyond the physical. The different currents of Physical Training can be defined according to the way in which the discipline is focused, covering currents that focus on education (its field of action is the school and the educational system in general), on health (Physical Training is considered as a health-promoting agent, with the intention of preventing diseases), on competition (discipline as sports training for the development of high performance), on recreation (playful activities to link the subject with the environment) and on body expression based on the influence it receives from dance, yoga and music (Fresneda, Herrera, and Álvarez, 2013).

For Sanabria Navarro and Silveira (2024), the group of Physical Training professionals plays an essential role in the training of future teachers, assuming multifaceted roles that include teaching, research, management, administration and linkage within training programs. This diversity of functions has led to the development of a heterogeneous professional identity as well as the emergence of various professional learning needs.

In this context, research stands as a fundamental pillar for the advancement and consolidation of Physical training, since biomechanical and physiological aspects of human movement are recognized up to the pedagogical and social dimensions of sports practice. This knowledge is essential to improve the quality of teaching, design effective intervention programs and make informed decisions in the field of Physical Training.

López (2006), considers that the physical development potential of an individual is strongly conditioned by the genetic and hereditary aspects and that only the external environment exerts a weak influence on the aptitudes of man (Calderón, Zamora, and Medina, 2017). For the purposes of this research, the authors assume this important reference but, it is considered that with adequate and personalized planning, control and evaluation, the pedagogical dimension can influence much more the development of values, skills and capacities of the individual. On the other hand, individual teaching offers the possibility of constant attention to the difficulties and special possibilities of students in the learning process. Collective education offers possibilities of socialization in teachers and students, it allows saving time and effort. From this conception, the so-called personalized education takes advantage of the possibilities offered by each of these educational modalities and it is oriented to internally strengthen the person to make him more socially effective. In this sense, we currently speak of personalized teaching.

In the scientific community, studies on University Physical Training are known from different theoretical and methodological conceptions, among which are found at an international level: Fernández-Río (2002); Conde (2011); Trigueros, et al. (2013); Lovoratti, (2016); Bermejo (2021). These authors, although they address the need for the practice of physical exercises in class in a self-regulated way, do not demonstrate the ways in which the student involves the physical-cognitive in the developing exercises as part of their physical performance in class.

In Cuba, the studies of Cornejo et al. (2011) and Fresneda, et al. (2013) are analyzed, who agree on the need for a physical-cognitive approach as part of doing physical exercise in University Physical Training. The timeliness and relevance of these investigations is recognized; however, their proposals do not demonstrate how to develop the teaching-learning process in such a way that the student is aware of what to do, to learn to self-exercise during class.

The relationship between cognitive and motor operations in the context of physical training practice has been addressed by different researchers at an international level such as: Conde (2011) and Almirall (2013); at a national level, the following stand out: López (2006), and more recently Blázquez and Páez (2017); Martínez, et al. (2020), these authors make valuable contributions regarding the relationship between the psychological and the physical during the practice of physical training in the Physical Training class; however, their conceptions do not express with a logical clarity, what it explains from a theoretical and methodological point of view, how to achieve the articulation between the psychological and the physical for the practice of physical exercise during class.

Therefore, it is necessary to study self-exercise as a teaching process in university students, since it allows to combine the external and the internal; the psychological, the physical and the attitudinal in a new representation as part of their physical performance in class, which makes it possible for the student to improve the knowledge, motor and sports skills, procedures, attitudes and values that are expressed in their professional performance.

The aforementioned aspects are what lead us to ask the following research question: how to contribute to the teaching of self-exercise in university students from the physical training class? The main objective of the work is to suggest a method based on the personological approach that considers the unity of the affective-cognitive and the physical, as well as the role of metacognition in the self-regulation of physical activity in the teaching-learning process of University Physical Training. This means that, in order to energize the conceived process, the inclusion of the personalized articulation method between metacognition and self-exercise is determined, which has as its main purpose to encourage the student to

develop habits of practicing physical exercises during class.

METHOD

A descriptive scope assessment is carried out according to its level of depth. The theoretical methods: analytical-synthetic, inductive-deductive and documentary analysis are used in the bibliographic review on self-exercise and personalized teaching in the context of the professional training of the university student, and of empirical order: participant observation, group interviews in its discussion group modality and an experiment in its pre-experiment modality (Porto, Ruiz, 2014). The sample was selected from the mixed approach, since it seeks to investigate relevant information and make descriptions on the research categories already presented above, and numerical or statistical data will not be used.

In the experimental design, the pre-experiment was selected to corroborate the hypothesis raised, which makes it possible to introduce the independent variable in the same group and thus control the internal movement that occurs. The study is carried out with a minimum control design through a pre-test and post-test and without a control group. The phases proposed by Mesa (2006) are assumed, these are: statement of the fact or phenomenon to be studied through the pre-experiment, determination of the hypothesis and the variables that will be present in the pre-experiment, delimitation of the conditions in which the pre-experiment is developed and collection and classification of the data obtained and its comparison with the initial data.

Phase No. 1. Declaration of the fact or phenomenon to study through the pre-experiment. In this phase or stage, the influence of the methodology in the process of university Physical Training for the teaching of self-exercise in the students included in the sample is evaluated. The pre-experiment begins in January 2023, aiming to characterize the initial state of preparation of teachers and students through a participatory diagnosis and their awareness regarding the teaching of self-exercise, ending in May 2024.

The population of 55 students belonging to the first and second year of the major Bachelor of Education in Pedagogy-Psychology is taken. A sample of 30 students is intentionally selected, representing 54.5% who belong to the first year of the aforementioned major. Teachers were also under analysis, 12 (60%) physical training teachers were chosen from the total.

Phase No. 2. Determination of the hypothesis and the variables that will be present in the pre-experiment.

Determination of the hypothesis: the application of a progressive articulation method between metacognition and self-exercise that contains the psychological, procedural and attitudinal dimensions; as well as the specific methodological guidelines for

physical performance based on a systemic, personalized and contextualized character, will favor the teaching of self-exercise in the University Physical Training class for students in the specialty mentioned before.

Hypothesis variables: the single group variant was used and the following variables were controlled:

The independent variable (IV) is included in the personalized articulation method between metacognition and self-exercise for the teaching of self-exercise in students from the sample. It is defined as "a set of procedures, techniques and means that, based on certain requirements, allows the Physical Training teacher to implement in a personalized and contextualized way the theoretical knowledge and methodological procedures for the teaching of self-exercise in students under study, which allows the solution of theoretical and practical problems that come from pedagogical practice.

From an operational point of view, it is a way that incorporates methodological training workshops for Physical Training teachers as part of the dynamics of preparing the discipline and subjects for self-exercise in classes.

The dependent variable (DV) includes favoring the teaching of self-exertion in the classroom for students of the major under study.

From the operational point of view, the implementation of the method is considered as a deployment of material and human resources based on the parameters optimization for its application. In addition, in the sequence of the stages and procedures, criteria are established for its control, evaluation and feedback. For the purposes of the experiment, the dependent variable is operationalized in the dimensions: psychological, procedural and attitudinal, as well as their respective indicators.

In this regard, Ruíz (2007) refers to the operationalization of the variables as: "(…) a process that can only be seen to the extent that they are integrated into the theoretical and systemic construction of the object to be investigated, in the essential knowledge of the object and not just to describe its behavior. (p. 56)

The external variables are those that constitute conditions for the development of the methodology; among which are: the acceptance and preparation of teachers, the motivational, volitional and organizational stimulation to develop this teaching, and the neurophysiological activity of students.

Phase No. 3. Delimitation of the conditions in which the pre-experiment is developed.

As part of the delimitation of the conditions to develop the pre-experiment, the training of the teachers in charge of carrying it out is planned; the training is carried out through six workshops (Navas, 2022).

RESULTS

Among the main significant contributions of the present study is the proposal of a personalized articulation method between metacognition and self-exercise. The suggested method has an internal structure that integrates cognitive, metacognitive, instrumental and affective components through a system of procedures that reveal this nature and, in accordance with this, allows the establishment of relationships between the personal and non-personal components of Physical Training, which enables the completion of the teaching tasks of self-training. It also implies the active, conscious and personalized nature of the student as a building agent of his own learning and of the teacher as a conductor through his performance in the teaching process. Metacognition and self-training are integrated into the dynamics of the method with a personological approach, considering not only the characteristics of the student for his training but also his responsibility in the process based on interaction and self-regulation. The methodological procedures and actions developed make the implementation of the method possible (Figure 1), they are:

Exercise contextualization: initial operation to implement the method, the teacher leads the process of awareness of self-exercise by moving from metacognition to the personal sense in the establishment of such relationship.

Exercise accessibility: the teacher confronts the levels of disposition (psychological and physical) for self-exercise that the student brings before performing the physical activity.

Exercise personalization: procedure in which the student differentiates the current state from the desired state in the acquisition of his motor learning. The disposition to change, derived from the clarity with which the subject understands himself, is decisive in the process of teaching self-exercise.

Methodological systematization of the exercise: expresses the logical continuity of the exercises, execution and development of self-exercise from a methodological perspective through the use of significant learning procedures for the mastery of the instrumentation in the physical performance of the student.

The teaching of self-exercise is ruled by contextualization, accessibility, personalization and the epistemological and methodological systematization of the exercise; and not by other activities that vary the true intention of this teaching, which means that it is a requirement of great value in University Physical Training.

Figure 1. *Graphic representation of the method of personalized articulation between metacognition and self-exercise*

The results obtained are derived from the analysis of the initial verification (pre-test) and final verification (post-test); and subsequently the comparative analysis of these two moments of the experimental design where the results of the indicators evaluated in each of the dimensions are reflected.

Conducting the initial verification experiment or pre-test

For the analysis of the results of the pre-experiment, the elements of objective judgments provided by the data of the initial diagnosis, the pre-test and the subsequent post-test are used. The data of the initial diagnosis constitute reference elements for the comparative analysis in relation to the teaching of self-exercise in the Physical Training class, established for the evaluation of the results.

The initial diagnosis stage aims to verify the level of preparation of teachers and students with respect to the use of the method of progressive articulation between metacognition and self-exercise during the Physical Training class. The results by dimensions are reflected below.

Psychological dimension:

12 students, representing 40%, were placed at the Mid-level, which shows physical performance, inaccuracies and insecurity in expressing theoretical and conceptual references of self-exercise.

18 students, representing 73.3%, were placed at the Low level, as they fail to apply knowledge that makes up the theoretical and conceptual references of self-exercise.

Procedural dimension:

14 students, representing 46.6%, were placed at the Mid-level, showing inadequacies in the use of metacognitive resources for self-exercise.

16 students, representing 53.3% of the total, are classified as Low, as they show little sense of independence and self-regulation.

Procedural dimension:

Four students (13%) were placed in the High level; that is the reason why they achieved an acceptable level of motivation to develop self-exercise.

18 students (60%) were placed in the Mid-level, where a limited willingness to confront the barriers that hinder this teaching in class is observed, although all of them recognize the value of self-exercise as part of their professional training; 26.3% of the total were placed in the Low level due to their dissatisfaction with themselves when carrying out physical activities.

The analysis of the results obtained from the observation of classes and the performance test (Annex 25) allows us to initially evaluate the 12 teachers in the psychological dimension and place them as follows:

Table 1. *Result of the initial evaluation.*
Psychological dimension

Total of teachers	Very good	%	Good	%	R	%	Bad	%
12	0	0	2	16,6	6	50	4	33.3

In the initial evaluation of the methodological teachers' performance for teaching self-exercise in class, it is noted that the psychological dimension presents the following limitations:

Two teachers, representing 16.6%, are rated in the category of Good, those who manage to express the conceptual and practical references to face the process of University Physical Training.

Six teachers, representing 50%, are rated in the category of Regular, showing inaccuracies and insecurity in expressing their knowledge about the conceptual and practical references for this teaching.

On the other hand, four teachers (33.4%) are rated in the category of "Bad", manifested in a limited mastery of the indicators that make up this dimension.

The procedural dimension allows to evaluate teacher's performance in class context and place them in the following way:

Table 2. *Result of the initial evaluation. Procedural dimension*

Total of teachers	Very good	%	Good	%	R	%	Bad	%
12	0	0	3	25	5	41,6	4	33.3

Three teachers (1, 3, and 8), representing 25%, are classified as Good, those who are able to use methodological and didactic procedures appropriately in teaching self-exercise during class.

Five teachers (41.6%), who are classified as Regular, are classified as having deficiencies in the selection of content and the teaching tasks designed, which do not lead to promoting self-exercise.

Four teachers (6, 9, 11, and 12), are classified as Bad (33.3%), due to difficulties in selecting specific content based on the objective, taking teaching tasks as the guiding element.

The attitudinal dimension allows the evaluation of the teacher's attitude and methodological disposition to assume the teaching-learning process to place them in the following way:

Table 3. *Result of the initial evaluation. Attitudinal dimension*

Total of teachers	Very good	%	Good	%	R	%	Bad	%
12	6	50	6	50	0	0	0	0

50% of all teachers reach the category of Very good, by demonstrating an active involvement in the process, with flexibility of thought when proposing solutions to self-exercise. On the other hand, the same number of teachers (2, 4, 5, 6, 11 and 12) reach the category of Good, although their methodological projection is active in class, their methodological performance is insufficient to achieve this indicator.

In general, these data show that in the teaching of self-exercise, students do not achieve, based on their physical performance, a systematization of knowledge, motor habits, motor skills and physical capacities for the productive search of specific contents as part of self-exercise.

The results related to the teacher show limitations in their methodological performance to assume the teaching of self-exercise in class, which demonstrates the negative impact on the dynamics of the

University Physical Training process. The author infers that these results were caused by the limitations in the scientific-methodological training of the teachers, reflected in the initial diagnosis.

The final diagnostic stage or post-test had the purpose of verifying the level of application of knowledge by the students and the methodological procedure of the teachers for self-practice in the class based on each dimension and selected indicators. In relation to the students' observation in classes, the following results are evident:

In relation to the psychological dimension, the three indicators are rated at a "High" and "Mid" level in general, expressed in the knowledge about the conceptual and practical referents in the student to develop self-practice in the learning process, with an openness to the use of metacognitive strategies in their physical performance in class.

In the procedural dimension, 16 students representing 53.3% of the total sample are rated High, as they manifest in their physical performance, a sense of independence and self-regulation in their learning. On the other hand, four students (13.3%) are rated as "Average", as they have difficulties in the learning process for self-exertion.

Regarding the attitudinal dimension, all students are rated as "High", they achieve a favorable level of motivation to develop self-exertion, and they show a sense of independence and self-satisfaction during class.

The analysis of the results obtained in the Final Performance Test processed with the Wilcoxon Signed Rank Test, allows the 12 teachers to be evaluated in the following way:

Regarding the psychological dimension, eight teachers (66.6%) reach the category of "Very Good", they obtain grades between 4 and 5 in all indicators, which it is translated into a correct application of the didactic and methodological resources to direct and evaluate this teaching in class. On the other hand, four teachers, representing 33.4%, are rated in the category of Good.

For the procedural dimension, six teachers (50%) are rated in the category of "Very Good", those who manage to correctly select the methods, procedures that favor personalized learning in the relationship of the levels of psychological and physical disposition for self-exertion, four (33.3%) obtain "Good", by adequately using the methodological and didactic procedures for this type of teaching, and two teachers, representing 16.6%, are rated with the category of Bad, by presenting difficulties with the selection of methods, and strategies that do not promote personalized learning and contextualized to the teaching of self-exertion.

In the attitudinal dimension, ten teachers, representing 83.3%, are rated as "Very Good"; and only two teachers (16.6%) are rated as "Good", expressed in a high level of belonging and motivation to assume this teaching in the

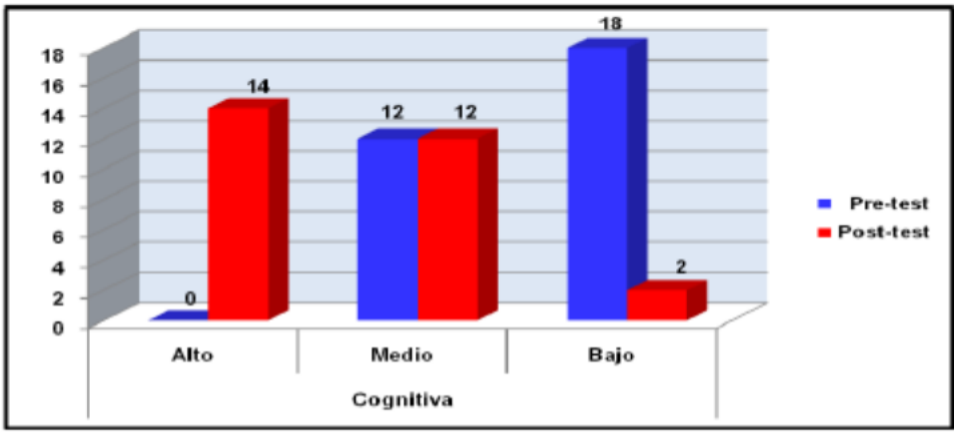
Physical Training class.

After applying the personalized articulation method between metacognition and self-exercise, an improvement in the indicators evaluated for each dimension begins to be observed; in the student's modes of action, a learning logic is verified through psychophysical resources mediated by self-regulation.

When comparing the selected significance level with those offered by the test, it is observed that $\alpha > \alpha\ 0$, so the null hypothesis is rejected and the alternative that reflects the difference in the distributions for both moments is accepted, with a high degree of significance.

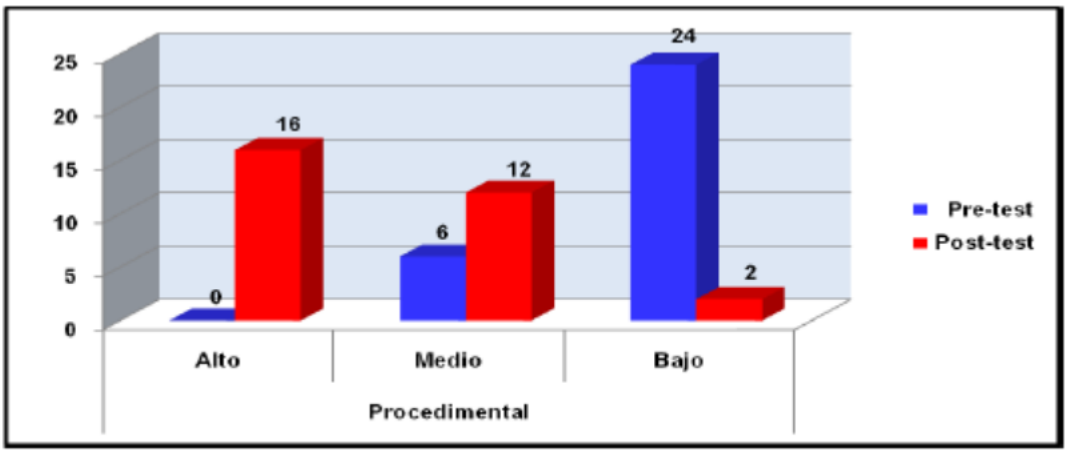
In general, the comparison of the results presented above shows that the indicators of the student's physical performance in its psychological dimension for teaching self-exercise, conceived in the pre-test, were evaluated between the "Mid" and "Low" levels, while in the post-test the three indicators went to a "High" and "Mid" level. The results are expressed in the following graph:

Graph 1. *Comparative results of the initial and final measurements, applied to the students to evaluate the (Psychological Dimension)*



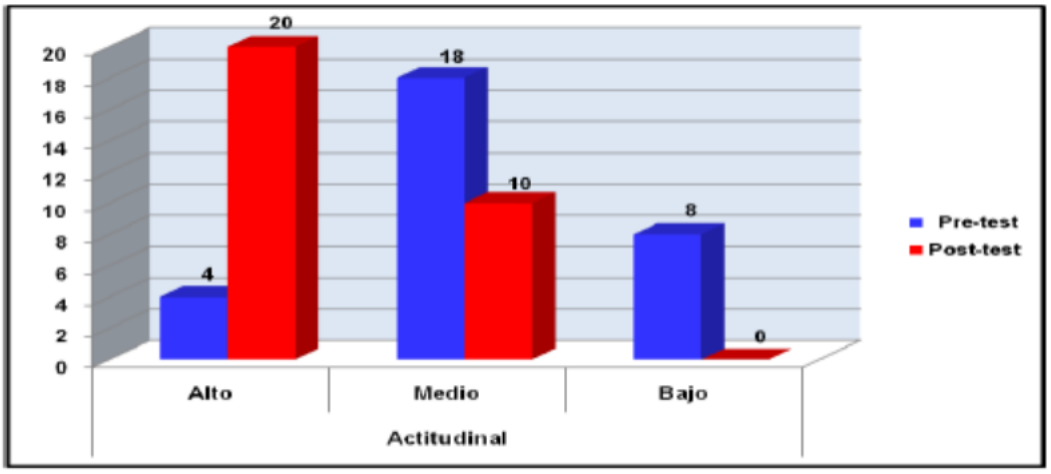
Regarding the comparative study between the pre-test and the post-test in terms of the procedural dimension in students, at the beginning of the research (Pre-test), they were located between the levels “Mid” and “Low”. This negative result responds to a limited use of the learning procedure to develop self-practice. However, in the post-test, significant changes are observed, there is a qualitative and quantitative leap when qualifying “High” 16 students (53.3%), an aspect that reveals a sense of independence and self-regulation; four students (13.3%) are qualified at the “Mid” level. The results are expressed in the following graph:

Graph 2. *Comparative results of the initial and final measurements, applied to students to evaluate the (Procedural Dimension)*



The comparative study between the pre-test and the post-test regarding the attitudinal dimension in students allows them to be placed between “High” and “Mid” in general. When applying the Wilcoxon signed rank test to assess the significance of the changes between the pre-test and the post-test, this indicator reaches a value of 0.007, which denotes significant favorable changes from the statistical point of view. The results previously exposed are shown in the following graph:

Graph 3. *Comparative results of the initial and final measurements, applied to students to evaluate the (attitudinal dimension)*



DISCUSSION

Although it is true that there are various studies on the subject presented, in the present research a way is suggested for the teaching of self-exercise at university Physical Training. Among the main scientific findings of this work that make what has been done constitute a novelty, it is the proposal of the method of personalized articulation between metacognition and self-exercise to encourage the student to develop habits of practicing physical exercises during class.

In order to carry out the qualitative assessment of the research results with the application in the educational practice of the method, qualitative results are presented:

The suggested method is valid, although it can be improved in its structure in correspondence with the current demands of University Physical Training; it is concretized from its functionality in the Physical Training program, although this interrelation can be perfected in the concretization of the methodological actions of its different procedures.

The application of the method allows us to appreciate that it is pertinent from the personalized and contextualized approach in the sample of this study.

The analysis and interpretation previously carried out constitutes an element of confirmation of the formulated scientific hypothesis, which presupposes that the objective of the research has been fulfilled, the object has been transformed and therefore the problem has been solved, since the teachers were able to develop the teaching of self-exercise in the teaching-learning process of the Physical Training subject, which favored the teaching of self-exercise, and to obtain transcendental transformations manifested:

In the teaching-learning process of the Physical Training subject:

The comprehensive analysis, from a new methodological approach, personalized and contextualized to address coherently and with sufficient depth the teaching of self-exercise at the University Physical Training subject; the application of a new epistemological logic for the treatment of the teaching of self-exercise, which incorporates the personalized articulation method.

In the teachers of the subject:

The enhancement of work with a personalized approach, according to the diagnosis of the students' physical performance and the methods that correspond to the teaching of self-exercise, enriches the didactic and methodological conception of the class in the subject at University Physical training.

The increase in the theoretical and methodological training of the group of teachers, through a conception of methodological work from the discipline and subject based on the teaching of self-exercise in class.

In students:

The establishment of cognitive and metacognitive learning strategies in the process of teaching self-exercise with different levels of difficulty, depth and variability.

The progressive transition of students through the different levels of physical performance as an expression of progress in the search and processing of knowledge, motor habits, motor skills and physical capacities in a conscious way in self-exercise during class.

Proposal of theoretical and practical methodological workshops for the implementation of the method.

Workshop No. 1. “Teaching physical self-exercise at university Physical Training classes”.

Type of workshop: Instruction and reflection workshop

Objective: to determine the real state of teachers based on the diagnosis, awareness and determination of their expectations in relation to the implementation of the methodology.

Workshop No. 2: University Physical Training from a personalized approach.

Type of workshop. Instruction and reflection workshop.

Objective: to instruct teachers on the main aspects that characterize Physical Training from a personalized approach, through the use of individual and collective reflection.

Workshop No. 3: Teaching self-exercise. Presentation of the methodological algorithm for its implementation. Steps, actions in class.

Type of workshop. Theoretical/practical workshop.

Objective: to argue the specific actions of a methodological nature for teaching self-exercise in Higher Education with emphasis on the implementation of the methodology.

Workshop No. 4. The university student as a learning agent in Physical Training.

Type of workshop. Instruction and reflection workshop.

Objective: to argue for specific didactic and methodological actions in the role of the student as a learning agent at University Physical Training with emphasis on the methodological algorithm for the implementation of the methodology.

Workshop No. 5. “The methodological management of the University Physical Training professor in teaching self-exercise during class”.

Type of workshop. Creation or innovation workshop.

Objective: to argue for the methodological management of the Physical Training teacher in the teaching of self-exercise based on the emphasis on the methodological algorithm for the implementation of the methodology.

Workshop No. 6. “Planning teaching tasks based on specific content for teaching self-exercise during class”.

Type of Workshop. Creation or innovation workshop.

Objective: to argue for the specific actions of a didactic and methodological nature for the planning of teaching tasks based on content for teaching self-exercise.

The proposal described above is an innovative initiative of a didactic and methodological nature for the Physical Training teacher, offering a personalized approach to work on teaching self-exercise in class. Understanding that the integration of the teacher's methodological performance and the student's physical performance is an indispensable condition to meet the objectives of this type of teaching in higher education, it improves the learning experience and promotes the habit of practicing physical exercise.

Among the limitations found in this research study, the following are highlighted:

The use of active methods by the teacher as a mediator and enhancer of autonomy in student learning is still insufficient.

As part of the solution to each learning situation for teaching self-exercise, the causal relationship between method and procedure is still insufficient for the purpose of teaching. It is necessary not to alter its logical functioning and to have the teaching of higher education in such a way that each teacher is in his performance with the number of students he can serve without moving away from personalized and self-regulated learning.

Within the context of teaching self-exercise at University Physical Training, this type of teaching still does not currently satisfy the needs of reflective and critical attitudes to obtain another didactic consideration that possibly makes it more solid and personalized.

The methods that the teacher selects to apply in this context must teach a committed attitude (teacher – student), whose commitment frequently takes the form of an expectation for the habit of practicing physical exercise, attentive to supporting a process that is becoming the basis for the formation of the future professional.

The need to adapt a teaching (self-exercise) to the student is a requirement that derives from considering his or her personalized character. In this sense, a physical perspective (state of physical disposition, physical condition, and specific capacities) and psychological perspective (needs, attitudes, interests and values, individual and social behavior) are also outlined.

Each student needs to use his or her own strategies for teaching self-exercise, even if these are a combination of those already existing. This is what has been called a “personalized approach” in this type of teaching.

Currently, based on the contributions of this study, a critical and reflective analysis has been carried out regarding the suggested method of personalized articulation between metacognition and self-training, comparing the

results obtained with the theoretical bases supported by the research. The contributions of the study are highlighted and its limitations are discussed.

CONCLUSIONS

Having presented the main results of the theoretical systematization of the work and the proposal as a solution to the problem declared, it is considered necessary to point out the value of the personalized articulation of metacognition and self-exercise method, which favored the teaching of self-exercise in the sample object of study; it allows a total interpretation at university Physical Training from the teaching of self-exercise, containing the system of relationships between its procedures that demonstrates the unity between the levels of psychological and physical disposition, offers a methodological procedure from teachers and students´ levels of performance to develop this teaching.

In this same way, the results presented constitute a novelty in the research by the scientific community specialists in the subject treated, by favoring a way for the teaching of self-exercise at the university student taking as a leading element the psychological, procedural and attitudinal dimensions, and changes in the methodological performance of the university Physical Training teacher.

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