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**CAPITALIZING OF THE MILITARY STUDENTS' MOTRICITY
THROUGH COMBAT DISCIPLINES**

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CONTENTS

1. Conceptual guidelines of the research	4
2. The content of the thesis	7
3. General conclusions and recommendations	26
4. References	29
5. List of the author's publications on the thesis topic	31
6. Annotation (in Romanian, Russian and English)	32

CONCEPTUAL GUIDELINES OF THE RESEARCH

Actuality and importance of the topic addressed.

History has demonstrated over time that in any armed conflict there was a need for military combatants to present the best possible level of military training, a complex ensemble consisting of a set of psycho-physical skills, general motor and application-utility abilities and understanding as advanced as possible and above all, vast specialized knowledge and skills (specific to the weapon), all of which are acquired in the instructive-educational process. All the history of the specialty has shown us that, although progress and technological development in the field of weapon had a galloping pace, especially after the First World War, the human factor, defined by physical capabilities and specialization, had and still presents a role determined in the conduct of armed actions. Today, the advances in the field of military technology and technique, the dynamics of development and adaptation to the new conditions imposed by contemporary armed conflicts and at the same time, the profile and the level of complexity and specificity of the missions in the operation theaters, require an increasingly high level of advanced and multidisciplinary training of today and tomorrow close serviceman [7].

The contemporary military environment today requires some evolutionary adaptations in most of its interest fields, starting from the area of the theory of military art and the management of military actions, or with the technology of weaponry and combat techniques and ending with training at the individual level. Regardless of the level to which we refer, it is recognized that one of the main factors that create advantages, which can be decisive on the battlefield and has continuous value, is the training for combat at the most advanced standards, of the military personnel. In the military system, combat training of personnel is a constant concern and requires a rigorous planning and a rhythmic development of all training activities, as well as a permanent and effective control to evaluate the efforts and resources consumed, the results obtained, the reserves and the evolution trends [13].

Each military component of the army will have to follow part of these specializations, they complement each other, being at the same time support for reaching the established objectives. From the point of view of military physical training, the development of this system is a priority for all specialists in military physical education, knowing the importance of the human physical and mental component for the fulfilment of the objectives and missions of military units.

Currently, the national army represents a complex system that evolves and adapts to the new. And like any system that can be perfected, the army evaluates situations, draws up plans, prepares and executes actions as a result of the plans, constantly improves the material component and contributes to the formation and development of its human resources, which must be directed towards the most complex forms of training, both intellectual, as well as physical, necessary to support military actions in order to achieve the established objectives [13].

In the process of training and specialization of the military, the level of physical and mental training is decisive. In a generalist analysis of the global situation, we can affirm the fact that the current soldier model does not imply a dehumanization of the military, but rather highlights his individual importance within the army. Recent operations clearly demonstrate the importance and value of soldiers who have been properly equipped and trained/prepared properly and under specific conditions. By viewing the military as a unitary system, the military ensures that soldiers - everything they learn, every action they take, everything they wear, transport or consume - work together as an integrated system, which also ensures the interaction and with other systems and subsystems [7; 13].

In the current vision of the country armies that are members of different military alliances at the regional or world level, *physical training* of the military has as its main purpose the general physical development of them and their capacity for specific effort. This improves

performance and the state of mental focus, promotes cohesion and the degree of maintenance and development of combat capacity, contributing to the formation of a well-prepared fighter, able to withstand the tension and stress, specific to combat missions in operation theaters. An advanced level of physical training will lead to the maximization of psycho-moral and physical components, combative capacities, will support the improvement and maintenance of general physical and mental health and will help to develop the capacity to resist stress states such as fatigue, fear, panic, hunger, etc. [7].

In order for the national army to be competitive with modern standards, some basic elements are needed such as: the proper provision of professional equipment, technology and technique; adequate military training and, of course, the quality and capacity of personnel. Their importance to building a professional army, along with a positive mental attitude, cannot be emphasized enough if the recruitment and selection of personnel is not appropriate especially from a physical point of view [5; 9; 14; 18].

During the training, development and specialization programs of the military student, the level of general and applied-utility physical training is decisive, so it is imperative that he have a very good physical condition and solid self-defense skills, which will allow to act quickly and efficiently in any imposed situation [3; 29]. The priority objective of military physical education lessons with the theme of self-defence is the formation of an important baggage of knowledge, skills and abilities in which there are technical-tactical elements from combat disciplines (Martial Arts) such as: Karate, Taekwondo, Judo, Kick-Box, and Jiu Jitsu (Brazilian), whose application in the lesson conditions the formation of a physical and mental profile specific to the military in the operation theater, which generates adaptive behaviours in limit situations [2, p. 9; 13; 24].

Considering the previously presented aspects and in agreement with bringing the national army to the highest possible standards, through conceptual, organizational and methodological transformations, but taking into account at the same time its traditions and values, the modernization of the concept of military physical education from military training programs should be taken into account as well. This is necessary for the training of fighters capable of facing challenges of any kind, which will value their knowledge, skills and practical abilities, in order to obtain advantageous situations and/or victory in a possible armed confrontation.

A permanent analysis of the missions carried out requires a new approach regarding the improvement of the physical training of the military, with a view to future participation in theaters of operations. More precisely, a new need is identified to define, evaluate and optimize motor capacity by establishing appropriate criteria and methodologies. These are useful to determine what the new physical fitness requirements for military personnel are, in order to prepare them to prevent physical overload and reduce the risk of injury.

The dimensions of the field of military physical education are defined by analyzing military actions, taking into account the mobilization of all the physical and mental forces of the military body in order to overcome the difficulties they require. The objective that must have priority in military physical education is the maximum utilization of the physiological and psycho-motor possibilities of the military in order to successfully solve the missions received.

The purpose of the work consists in the modernization and optimization of the didactic process in the activity of military physical education by capitalizing of the military students motricity based on specific means adapted to combat disciplines.

It was also followed increasing the combative potential together with the development of motricity and technical-tactical combat knowledge and skills that also have an influence on the psychological level, by using the specific methods of sports training and by deepening a set of the most complex technical combat procedures, included in the experimental program.

Research objectives:

1. Identifying the methodological aspects of military physical education and the use of

the means of combat disciplines in increasing the military students' motricity based on the analysis and synthesis of specialized literature;

2. Analysis of the opinions of military personnel regarding the current way of carrying out specialized physical training activities and the possibility of implementing a work program based on means specific to combat disciplines;

3. Evaluation of the general level of military students' motricity and the development of the experimental program focused on means specific to combat disciplines.

4. Experimental argumentation of the use of combat disciplines means in capitalizing on the level of military students' motricity.

Research hypothesis assumes that by implementing the experimental program in this paper, as an alternative program of general physical training, specific application-utility and self-defense, focused on the use of specific means of sports training in combat disciplines, it will contribute considerably to the increase of efficiency in the training process/development/optimization and capitalization of the motor skills of military students and, above all, to the formation and deepening of knowledge and skills of hand-to-hand combat, with or without the light weapons provided, against the background of a higher level of self-confidence, an emotional balance much better and of a much stronger character.

Research methods. Several scientific research methods were used for the elaboration of this work, both general methods, such as the analysis of specialized literature or statistical-mathematical analysis, but also specific methods found in most works dealing with case study themes, based on practical elements, such as survey based on sociological questionnaire, pedagogical observation or pedagogical experiment.

Scientific novelty and originality: consists in the modernization, diversification and efficiency of the specific physical training process, by implementing an alternative program within the military physical education lessons, focused on means specific to combat disciplines.

The results obtained that contribute to the solution of an important scientific problem consist in the experimental argumentation of the effectiveness of the military physical training program within the physical education classes regarding the increase in the military students motricity based on the application of the specific contents of combat disciplines.

Theoretical significance is highlighted by establishing and substantiating the conceptual and methodological basis regarding military physical education, by implementing specific means from combat disciplines in the didactic process.

Application value is demonstrated by the possibility of using the means, the results of the research and the experimental program, in order to optimize and modernize the didactic process of capitalizing the military students' motricity. The curriculum can be proposed for implementation in the process of teaching and continuous training of personnel in military educational institutions.

Implementation of scientific results: the results of the scientific research were used in order to optimize the specific physical training process, by implementing the curriculum in the military physical education lessons held at the "Ferdinand I" Military Technical Academy.

Structure of the thesis: the work consists of: annotation (in Romanian/Russian/English), list of tables, list of figures, list of abbreviations, introduction, 3 chapters, general conclusions and recommendations, references from 217 sources, 9 appendices, 17 tables, 64 figures, 141 of basic text pages.

Keywords: military students, military physical education, specific physical training, motor skills, motor capacity, combat disciplines, combat training program.

THESIS CONTENT

1. Theoretical-methodological approaches aimed at combat disciplines within military physical education programs

It is society that must recognize the major importance of physical education and sports in various fields of professional activity. In addition to these valences listed previously, the phenomenon of physical education also has major implications in the multilateral physical training of military students, maintaining their health at a level corresponding to the requirements of the contemporary military [27].

In this context, we can affirm that military physical education is also an integral part of training/education programs and systematically capitalizes on all forms of collective or individual activity, which are carried out in order to train, develop and maintain motor capacity, contributing to improving the condition of physical and mental health of all military personnel [5; 7; 28; 33].

In the process of training specialists in the military field, in Romania, as in other countries, training is a gradual and continuous process, which must be carried out in order to train and maintain the operational capacity of the structures that make it up, differentiated by category of forces and commands, on educational structures, practicing operations and actions specific to them [7; 26].

Analyzing the types and forms of effort to which the military are subjected in military actions and operations, it results "*dimensions*" the field of physical education in the field of defense and national security, and the effective utilization of the physiological and psycho-motor skills of the military for the fulfillment of military missions is the priority objective of this activity. The dynamism of combative actions together with the forms and methods of combat adopted and the characteristics of the battlefield are factors of the armed struggle that determine the content of the military physical education activity [1; 7].

Within the instructional-educational process of military physical education [34], physical training requires special attention, being at the same time a component of the military's physical training, an element that supports practical activities and has as its central objective the development of motor qualities (resistance, strength, mobility-flexibility-dexterity, speed), as well as the optimization of the body's morpho-functional parameters, considering the specifics of military missions [14]. Through this, the instructive-educational process of military physical education aims at training, cultivating and increasing the physical capacities of the military, a process carried out in order to perfect the physical development and motor capacity, depending on the particularities of age and sex, the requirements and needs of combat, but also the specialties of the army" [2].

The system of physical education and sports in higher education in Romania, including institutions with a military profile, is in a period of important transformations, whose main objective is to direct the educational process towards international standards of training and personal and socio-professional development. In this context, the personnel from the military environment, more than in any other field of activity, must be directed towards complex forms of training, intellectual and physical, necessary for the performance of military tasks in order to achieve the established objectives

Considering the aspects presented and agreeing with bringing the military training system to the highest possible standards, through conceptual, organizational and methodological transformations, but taking into account at the same time its traditions and values, the

modernization must also be taken into account the concept of military physical education and sport. This is necessary for the training of soldiers capable of facing challenges of any nature, which will value their knowledge, qualities, skills and applicative-utilitarian abilities, in order to obtain the most advantageous position in a possible military conflict [7 ; 10; 14; 16].

In this context, physical training is a form of training that can effectively respond to the physical and psychological requirements of the fight, admitting that the improvement of the morpho-functional parameters of the body, the motor qualities is done only through a systematic, gradual, continuous training, the effects being observed over time [13].

Currently, the majority of recent operations clearly demonstrate the role and value of the military, who had the appropriate equipment and were properly prepared/trained under specific conditions. At the same time, despite the technological progress taking place at a very accelerated pace (especially since the 2000s), hand-to-hand combat still remains a necessity in the contemporary operating environment, especially if we refer to the ambiguous character of urban warfare or to the close and regular interaction of militaries with diverse adversaries who may or may not be combatants, and in a fairly broad spectrum of situations in which force is used. Being a "dispute" between two or more combatants, in a conflict in which ammunition cannot be used, the combat training of the military is an important component, which the army must consider in the physical preparation of the military for future conflicts [8; 15; 2. 3; 30].

Thus, within the military physical education system in educational institutions with a military profile, in order to contribute essentially to increasing the level of physical training, specific means are also used that belong to alternative sports disciplines, such as combat disciplines, which brings a considerable contribution to the formation, development and maintenance of the motor capacity of the military [6; 8; 12; 15]. With their help, physical and mental training can be improved in all forms of organization of military physical education, the selection and teaching methodology of these exercises useful for everyday life being linked to the objectives and tasks of the didactic process, the material conditions or the particularities of age and gender [23 ; 24; 29; 30].

Returning to the basic link in the military's specific physical training - the military physical education lesson - the presence of combat disciplines is currently relatively limited, although their characteristics urge us to pay more attention in this regard. In the contemporary conditions of military training, it would be desirable for this form of physical training to benefit from a dedicated, well-structured program over a longer period of time, which could later lead to a standardization of this area of activity .

The need to budget more time for self-defense lessons, both in terms of weekly/semester meetings and longer periods of time (years of study in the case of military pupils/students) is increasingly visible to achieve more advanced performance. Also, a diversification of the technical-tactical elements, coming from a more extensive framework of combat disciplines or from programs dedicated to combat, which would also determine a modernization of the curriculum, could have a beneficial influence on the effectiveness of physical training . These closely related aspects could lead to a much more advanced level of efficiency and could lead to a standardization of physical training at the level of the Romanian army [6; 15; 2. 3; 30].

Looking from a modern perspective and adapted to the new requirements imposed by the theaters of operations, the multidimensional character of military operations identifies the need for the military to be permanently very well prepared from a physical point of view, so that they have the availability to fight in environments extremely difficult. This implies a periodic "reformation" and adaptation of military physical education programs, specific to the process of integral training of contemporary soldiers. From here it follows that the contemporary military must have a *multisport training*, which requires specialists in the field to use more specific elements from the combat disciplines. These means will allow the fighter to develop more and

better motor, applicative-utilitarian and especially self-defense skills that will positively influence every action he will undertake during training hours or missions on the battlefield .

2. The usefulness of the means specific to the combat disciplines for capitalizing on the motor skills of military students

The basis of this research was a set of methods, which constitute the ways of achieving the objectives proposed in the experiment, being also a scientific-methodological support in the acquisition of results in terms of knowledge both theoretically and practically. At the same time, these methods direct us to the set of procedures and steps undertaken to achieve in a deliberate way some changes in the objective material reality [20; 31].

Thus, for a good performance of the case study, we used the following research methods and evaluation tests:

- ✓ analysis of specialized literature;
- ✓ survey based on a sociological questionnaire;
- ✓ pedagogical observation;
- ✓ the pedagogical experiment method;
- ✓ statistical-mathematical method

Organization and conduct of scientific research

For this work, the research was organized and carried out within the "Ferdinand I" Military Technical Academy in Bucharest - Faculty of Computer Systems and Cyber Security, with military students from the third year of study. Two groups of subjects were formed, the first group was made up of 25 military students and represented the experimental group (E.G.), and the second group, also made up of 25 military students and represented the control group (C.G.). Both groups participating in the experiment have a very homogeneous structure from the perspective of age and gender, thus, all 50 military students are male, aged between 21-22 years.

During the pedagogical experiment, the students of C.G. have completed the analytical curriculum approved in the "Military Physical Education Discipline Sheet" for the undergraduate cycle, and the component students of the E.G. have completed the experimental program proposed for this scientific research.

During the research activity, several stages were completed, namely:

- *Stage 1* was carried out between January 2019 and September 2020. In the first phase of the research, the attention was directed to the study of the specialized literature for a good theoretical argumentation, to the study and analysis of the analytical program and the curriculum of the military educational institutions, but also to the analysis of the ways of military physical training with specific themes from combat disciplines (Karate, Taekwondo and Judo) and the contribution that this option can bring to the development of the motor skills of military students and implicitly of military training programs, all for the most effective adaptation of the experiment program ;
- *Stage 2* took place between October 2020 and June 2021. In this second stage, the design, analysis and testing of the items for the 2 sociological questionnaires and their placement among specialists in the field of military physical education and military students within the Military Technical Academy was carried out, for collecting, centralizing and processing information necessary for research. At the same time, within this stage, at the end of the 2020-2021 academic year (June 2021), a general test took place in which 80 military students participated, to check the general level of physical training they are (*the ascertaining experiment*) for the purpose of analysing and centralizing the data obtained in order to design the experimental program;
- *Stage 3* took place between October 2021 and June 2022. This step constituted the pedagogical experiment and required an entire academic year, during which the subjects of the two participating groups (E. G. and C.G.) had two more complex tests (initial testing and final),

where the events of the combat disciplines were introduced and systematized in order to obtain more useful data in the analysis and demonstration of the effectiveness of the experimental program;

- *Stage 4* was the stage where the research activity involved the centralization and statistical-mathematical processing of the data obtained as a result of the comparative experiment, the analysis, the interpretation of the results and the formulation of some final conclusions and recommendations.

In this scientific research, one of the tools used for data collection was the sociological questionnaire. In this sense, two opinion questionnaires were designed, each of them presenting a set of specific questions in their content, to help us obtain information regarding the opinions and preferences of those surveyed, for the identification of objectives to be pursued within the military physical education lessons. So, the first questionnaire was addressed to several people from military educational institutions, 46 teachers or military personnel, responsible for military physical training and in some cases self-defense, and the second opinion questionnaire was distributed to completion, to military students from the Military Technical Academy, from different years of study (mainly from the final years, the IIIrd and IVth years of study).

The opinion questionnaire addressed teachers or responsible military personnel of the management and coordination of the military physical education activity, included questions related to the importance of the M.P.E. lessons, the way they are organized and have thematic content from the combat disciplines applied in the physical training of military students, the time allocated to this form of physical training or specific questions from the field of combat disciplines.

The subjects questioned in this opinion survey are of the opinion that specific topics from combat disciplines should be present in the physical training process of military students (Figure 1), registering a percentage of 100% for the "affirmative" answer variety .

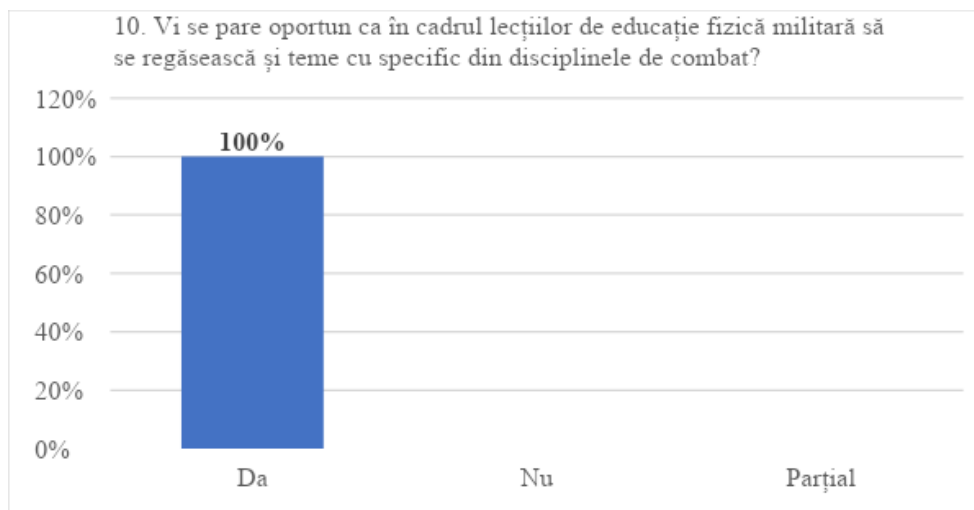


Fig. 1. The need for combat disciplines in M.P.E. lessons.

The following item, in which the problem was raised, is also part of this discussion area *mandatory* for these combat topics to be present in Military Physical Education lessons, a fact that is considered by 86% of respondents (Figure 2). Thus, these two items motivate the presence of an alternative physical training program based on specific means from combative disciplines.

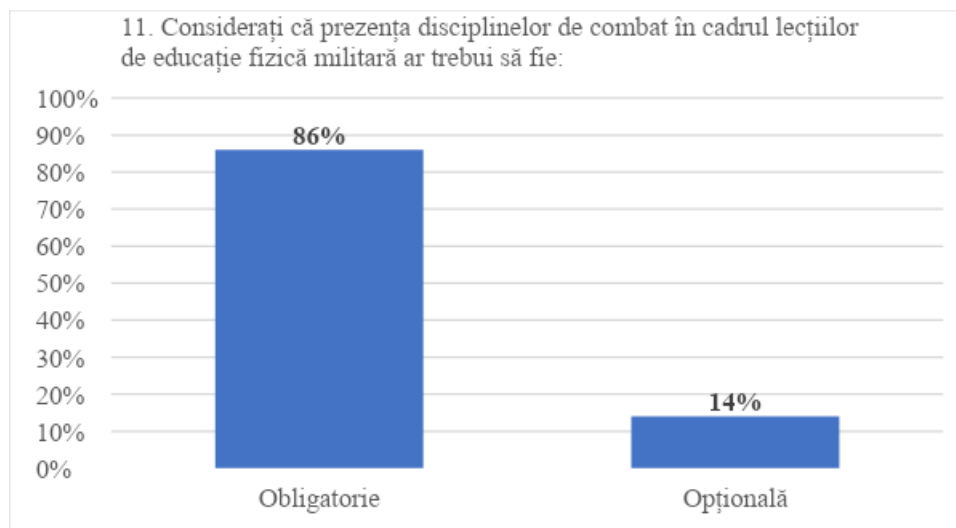


Fig. 2. Mandatory presence of combat disciplines in M.P.E. lessons.

Analyzing further the results from the item, in which the opinion about the effectiveness of the content of combat disciplines in the physical and mental training of the military is researched, all the respondents appreciate it as a factor of progress. For the leading answer variants, which motivate the experimental program, a rate of 61% was recorded for the variable "to a great extent" and a percentage of 39% for the variable "to a very large extent" (Figure 3).

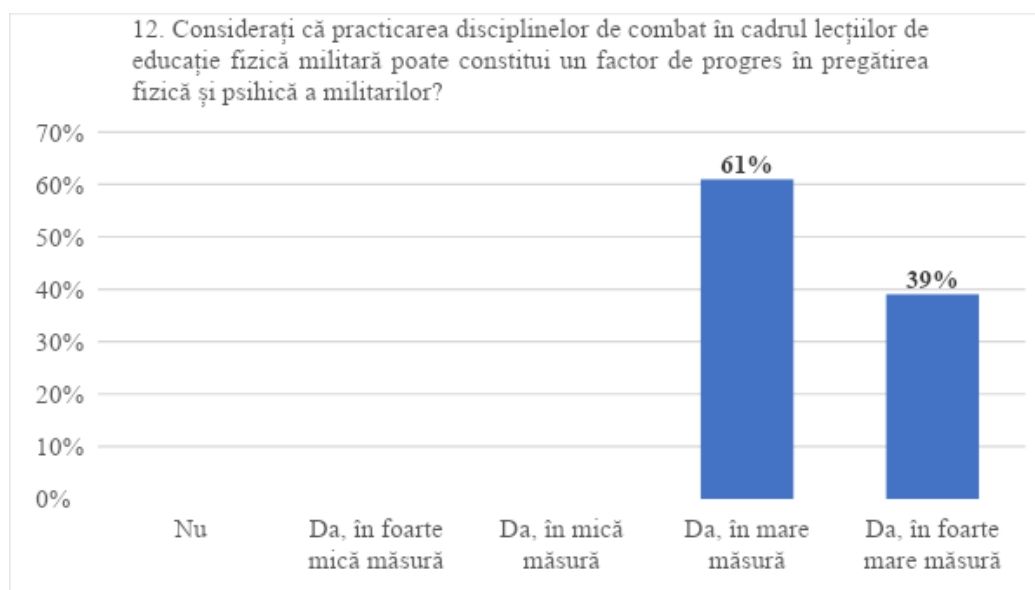


Fig. 3. Combat disciplines - factor of progress in military physical training

The realization of this opinion survey among the personnel from the military environment, which leads the activity of military physical education, was a confirmation of the need for some alternatives of modern physical training programs and better adapted to the new requirements imposed by the profile of the actions encountered in the theaters of operations. The information and data collected with the help of the opinion questionnaire addressed to the specialized personnel responsible for the military physical training leads us to a much clearer overall picture in terms of the adaptation and modernization of the physical training activity of the military personnel to increase the efficiency of the general military training programs.

Thus, the opinion questionnaire addressed to people specialized in physical education and who lead military physical education lessons in military educational institutions, including people with combat specialization or experts in the field, had a major contribution to establishing and identifying some premises in the organization of scientific research, through the contribution of collected and analyzed information, which led to the decision to develop and implement the experimental program.

In the same context, the data obtained from the sociological questionnaire addressed to military students from the "Ferdinand I" Military Technical Academy in Bucharest were centralized and analyzed.

This opinion survey was carried out on a sample of 106 military students in the 3rd and 4th years of study, who already have more study experience and a better ability to analyse the M.P.E. phenomenon, and the results were centralized with percentage values.

Interest in combat disciplines included in the instructional process of military physical education (Figure 4), constitutes a cumulation of over 93%. The general opinion of the military students interviewed is that the combat techniques studied in the lessons of military physical education are accessible (44%) and interesting (49%), which once again confirms the need for this specific physical training alternative.

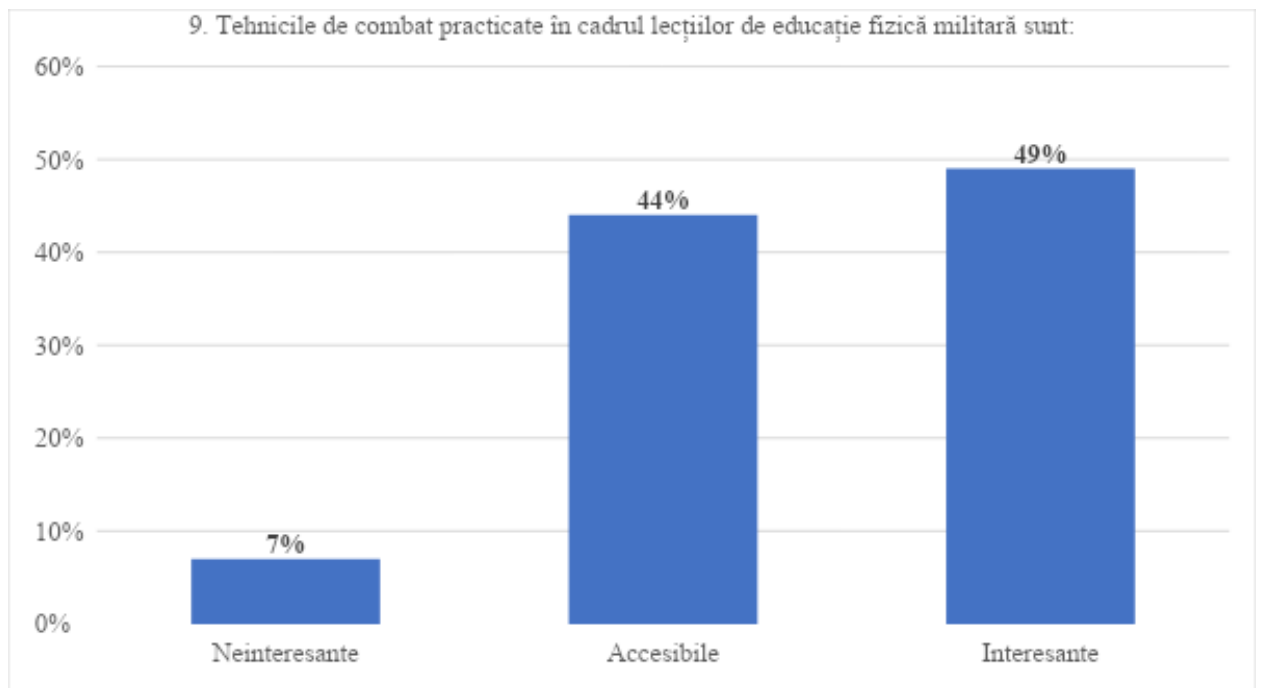


Fig. 4. The opinion of military students expressed towards combat disciplines

The opinions of military students (Figure 5), regarding preferences the selection of technical elements from the combat disciplines, expressed in the respective questionnaire, indicates that the closest technical elements of major attraction from the combat disciplines are "Strike Techniques" with a percentage of 69%, "Ground Design Techniques" with a percentage of 70% and "Ground Combat Techniques" with a percentage of 75%.

It is easy to understand that the possibility of multiple selections of answer variants led to a ranking of the fighting techniques preferred by those surveyed, this time having the possibility to select one, two or all three answer variants.

Thus, the results obtained in this item also helped to develop a combat-specific physical training curriculum based on the preferences expressed in this opinion survey.

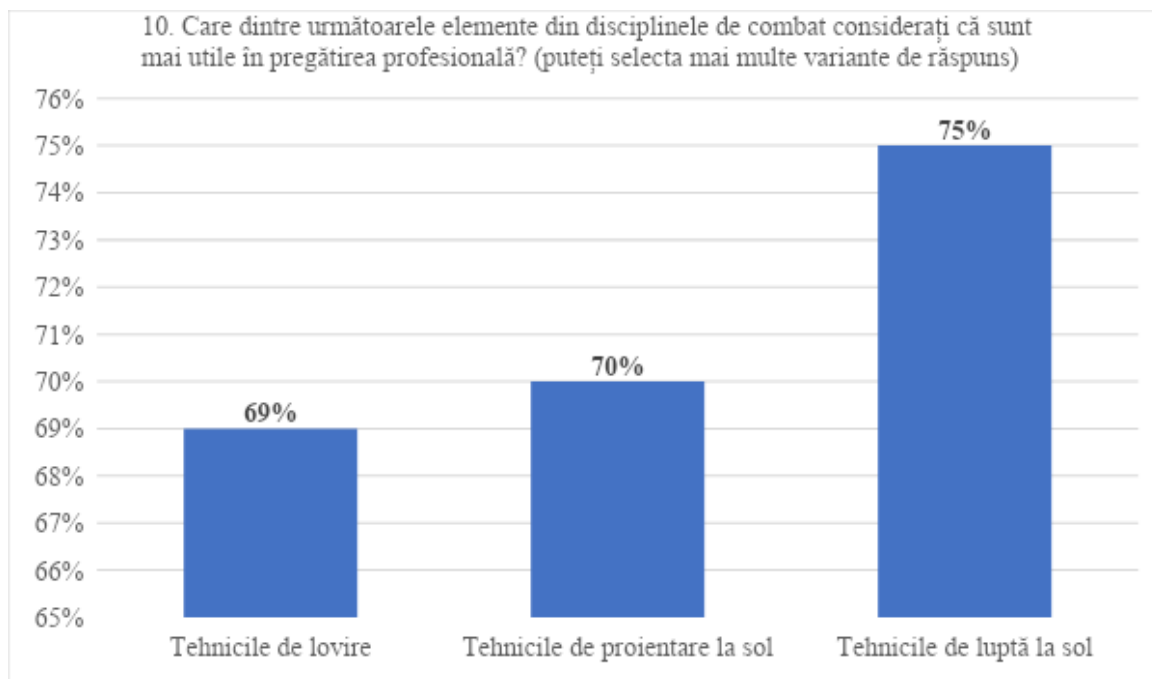


Fig. 5. The preferred thematic elements of combat

The information obtained based on the opinions of the respondents involved, highlighted their preferences regarding the daily sports activity, the way of carrying out the military physical training activity within the training program, the interest and necessity of practicing some combat disciplines within the M.P.E. lessons, the efficiency of this training option or the allocation of a larger weight from the point of view of the time budget for this type of training, from the total time allocated to military physical education lessons.

The general opinion, expressed through these two surveys, demonstrates that the alternative military physical training program through combat disciplines can be a factor of progress in this activity, presents a long-term usefulness and is also a point of interest and attraction in among students attending military physical education lessons.

The first evaluation within this scientific research was that of the level of physical training, recorded by the military students in the experimental experiment at the end of the academic year 2020-2021. The more than 80 military students participating in this physical assessment have only completed the military physical education curriculum.

In order to have a clearer picture of the level of physical training that military students demonstrated at the time of conducting the ascertainment experiment, 6 practical tests were selected, of which 3 are included as mandatory tests in the military physical education curriculum (lying face down push-ups, raising the trunk to 90° from lying on the back with hands on the back of the head and endurance running over the distance of 3000 m, tests, which in the first two years of study are evaluated with the qualifications "Admitted / Rejected"), and 3 additional tests, which tests motor skills differently. Thus, the speed running test over the distance of 100 m (the maximum accepted time is 14 sec. to be admitted), the pull-up test at the fixed bar with supination hold (minimum 6 repetitions to be admitted) and the test of standing long jumping (minimum 2 m to be admitted), tests, which will also be found in the comparative physical tests in the next stages of the research (Table 1).

Table 1. Assessment of the level of motor skills according to the evaluation indicators (n=80)

No. Ct.	Evaluation indicators	Evaluation criteria to be admitted	Average value $X \pm m$	Coefficient of variability V%
1	(Lying face down push-ups (no. rep.))	≥ 31	34,22 \pm 3,61	28,55 %
2	Raising the trunk to 90° from lying on the back (rep. no.)	≥ 35	42,62 \pm 4,80	26,26 %
3	Endurance running – 3000 m. (min./sec.)	$\leq 16:15$	15.36 \pm 1.46	29.36 %
4	Fixed bar pull-ups (no. rep.)	≥ 6	6.31 \pm 2.65	42 %
5	Standing long jumping (m)	≥ 2	2,17 \pm 5.92	37,2 %
6	Speed running– 100 m (sec.)	≤ 14	13,2 \pm 1,26	23,55 %

Analyzing the results of the physical tests, included in the motor testing process of military students, we observe values close to those that correspond to the requirements for the "Admitted" qualification. At the same time, relating the average values recorded for each separate test to the requirements of grade assessments, we obtain only grades of 5 and 6.

Following the previous analysis, carried out on the basis of the data obtained after conducting the ascertainment experiment, we can appreciate that the general level of military physical training demonstrated by the 80 military students from the Military Technical Academy, who participated in this physical assessment, is relatively low. This fact makes us note a level of motor development appreciated only with the qualification "sufficient", but insufficient, in our opinion, for a utilitarian-applicative physical activity of the future soldiers.

Consequently, based on the results obtained regarding the general level of motor skills demonstrated by the military students, we can state that a restructuring and reorganization of the content of the curriculum for the discipline is imperatively necessary *Military physical education*, in order to optimize the specific physical training activity.

This fact motivated and facilitated the development of an experimental program that would intervene very effectively in the physical training of military students. The program is focused on a well-defined set of elements specific to the combat disciplines (Karate, Judo, Taekwondo), obviously, disciplines that can be found in the curriculum for the undergraduate university cycle within the military institutions of higher education.

The first step carried out in the development of the work program for the experimental group was a *reorganization* part of the existing curricular program that was achieved by redistributing the sports disciplines over the years of study (Table 2), according to the time budget allocated and approved by the document " Discipline sheet M.P.E", at the level of a military institution of higher education.

Therefore, the new working formula, corresponding to the experimental program, involves a rotation, by permuting the combat disciplines, from the second year of study (as provided in the existing curriculum, where an annual budget of 14 modules was allocated, 7 per each semester), in the third year of study (where a twice larger budget is allocated, with 28 modules, 14 each semester).

Table 2. Redistribution of study activities for the M.P.E. discipline, within the experimental program for the undergraduate cycle

Academic year	Semester	No. modules / semester	No. modules / week	Type of activity	Location
Year I	I	7 modules	1 module every 2 weeks	M.P.E. Gymnastics	Gym
	II	7 modules	1 module every 2 weeks	M.P.E. Athletics	Gym Sports facility
Year II	I	7 modules	1 module every 2 weeks	M.P.E. – sports game Volleyball / Handball / Football	Gym Sports facility
	II	7 modules	1 module every 2 weeks	M.P.E. – sports game Volleyball / Handball / Football	
Year III	I	14 modules	1 module / week	M.P.E. Discipline combat	Gym
	II	14 modules	1 module / week	M.P.E. Discipline combat	
Year IV	I	7 modules	1 module every 2 weeks	M.P.E. Development of motor skills	Gym Fitness hall Sports facility
	II	7 modules	1 module every 2 weeks	M.P.E. Development of motor skills	

Note: 1 module = 100 min.

This roundhouse materialized by obtaining a larger time budget for the physical training of military students through combat disciplines, a fact that will help to improve the motor skills of military students, to develop and diversify the technical-tactical combat baggage, very necessary and useful in the training programs for future officers, both in their future military career and in everyday life (a fact also appreciated by the majority of those surveyed, either M.P.E. specialists or military students).

3. The effectiveness of the means specific to the combat disciplines for capitalizing on the motor skills of military students

The unanimous opinion of specialists in the field of military sciences confirms that: "...among all the qualitative and quantitative factors that give the efficiency of an army, only one has permanent value - the level of physical training of the military, without which the most perfected armies and the most ingenious conceptions remain ineffective..."[22]. With a defining character in the career of any military professional, specific physical training has always been and will always be a basic element in any military training program, regardless of the type of specialization (land, air or naval forces, engineers, etc.).

Thus, by going through the three types of tests, the effectiveness of the experimental program from this scientific research was practically demonstrated, a process that is directly based on the simple comparative analysis of the statistical indicators obtained after performing the motor tests in the control and experimental groups. In this sense, for the statistical-mathematical interpretation of the results obtained in the pedagogical experiment of this research, several statistical indicators were used, including the student test, and the values

obtained for this indicator were constantly reported to the coefficient of significance P , which it indicates the degree of significance of the results obtained [17; 19; 25; 31; 32].

The first step carried out in order to carry out the comparative analysis was to study the dynamics of acquisition of the technical procedures selected for the combat-type tests within the pedagogical experiment. This type of testing was based on the classic scoring method with grades from 1 to 10, awarded by the combat evaluation commission present on the occasion of the two combat skills evaluations, where the technical procedures included in the experimental program were evaluated, being specific to the physical training process of military students. For this evaluation time, the level of correctness from a technical point of view (biomechanics of the technical procedure) and the level of development of the motor qualities demonstrated in the execution of the combat procedures were taken into account.

The results obtained from the two final evaluations, related to each group separately, were centralized, and in order to synthesize a more real and accurate analysis of the dynamics of acquiring combat technical procedures for the two groups of military students, the indicators were calculated statistically *student test* (t), which was reported to *significance coefficient* (P). So, in Table 3 we find processed all the values obtained by the two groups of subjects for each of the 7 technical combat procedures separately, selected for evaluation, and the degree of significance of the efficiency of the experimental program is shown both by reporting to *the coefficient of significance* P , as well as through graphic representation and interpretation.

One of the simplest and most frequently used striking techniques (attack/counter-attack), is the Gyaku Zuki combat technique, tested in the two evaluations was the direct punch, but the longer period of practice and deepening of which benefited the experimental group, compared to the control group, left its mark on the way of execution demonstrated by the military students, but also on the level of motor skills demonstrated by them. Thus, we observe a considerable difference between the two averages of the grades recorded by the two groups, where the experimental group is 1.92 points away from the average obtained by the control group, which makes the evolution of the experimental group following the course of the experimental program to be one highly significant ($P < 0.001$). For this test, the level of correctness from a technical point of view was taken into account, in the regime of maximum execution speed and strength, but also endurance, as consecutive rounds of 10 repetitions each, first free kicks, in the air, were completed (shadow-boxing) and then with a sparring partner

For the Mae Hiza Geri technical procedure, which tests the skill and ability to strike with the knee, testing that was carried out both through the repeated execution of direct strikes in the air, as well as with a sparring partner (including clinch situations), was also recorded a notable difference of almost 2 points.

The difference between the two evaluations, resulting from the calculations of the statistical indicators, demonstrates a very significant evolution for the experimental group ($P < 0.001$). This attack/counterattack technique is very useful and common in direct, hand-to-hand combat circumstances. As we know from practice, there are many missions (especially rapid intervention of Special Forces) that ultimately lead to direct conflict. In these conditions, fighting from the clinch, with or without the light weapons provided or other improvised attack tools, and knee strikes are very effective, the distance between the opponents being relatively small. On the other hand, it is also known that the direct knee strike is very powerful and very versatile, and the chances of neutralizing the opponent are quite high, especially in the case of a soldier well prepared for this type of conflict.

The last striking technique selected for this test structure (combat testing) was the circular kick to the body and head – Mawashi Geri. The blow is very effective and versatile, all the more so as it is directed to the upper part of the body (toward the head), especially taking into account

the fact that the combatant military has specific equipment (military combat outfit with boots), a fact that "gives weight" to headshots.

Table 3. Dynamics of the indices for the subjects participating in the pedagogical experiment within the combat testing

No. crt.	The technical procedure	Statistical indicators			
		Testing C.G. final IIrd year	Testing E.G. final IIIrd year	The student test	Significance ratio
		$X \pm m$	$X \pm m$	t	P
1	The direct punch <i>GYAKU ZUKI</i> (grade from 1 to 10)	7,28 ±0,18	9,20 ±0,17	3,25	< 0,001
2	The knee clinch strike <i>MAE HIZA GERI</i> (grade from 1 to 10)	7,16 ±0,18	9,12 ±0,18	3,26	< 0,001
3	Circular kick to the head <i>MAWASHI HERI</i> (grade from 1 to 10)	6,88 ±0,18	9,04 ±0,17	3,66	< 0,001
4	Ground design by unbalancing <i>O SOTO GARI</i> (grade from 1 to 10)	6,32 ±0,18	8,36 ±0,14	3,64	< 0,001
5	Ground charge design <i>O GOSHI</i> (grade from 1 to 10)	6,64 ±0,18	8,32 ±0,17	2,84	< 0,001
6	Armlock choke <i>HADAKA JIME</i> (grade from 1 to 10)	6,96 ±0,16	8,24 ±0,16	2,24	< 0,01
7	Cross dislocation of the outstretched arm <i>JUJI GATAME</i> (grade from 1 to 10)	7,36 ±0,18	8,64 ±0,17	2,16	< 0,01

Note: n = 25

P – 0.05 0.01 0.001

f (n-1) = 24

t – 2.064 2.797 3.745

f = 48

t – 2.011 2.682 3.505

The difference of 2.16 points recorded between the averages of the two groups participating in the experiment, also in favor of the experimental group, demonstrates that the experimental program proves a very significant progress ($P < 0.001$) in the combat training process of military students and especially in their motor development.

For combat testing, which provides for the design technique of the adversary on the ground, only two technical procedures were selected, which can be found both in the curriculum approved by *Discipline sheet* at the level of a military institution of higher education, as well as in the thematic content of the experimental program.

Designs are technical elements of combat that occur in the fight on the feet, but at the same time, they are a precursor to the technical procedures for neutralizing the opponent on the ground (strangles, choke, etc.). At the same time, depending on the level of experience of the military fighter, but also on the combative circumstances (location, ground, the opponent's

reaction mode, etc.), these procedures can even lead to the neutralization of the opponent, showing a very high character of hardness and aggressiveness in the clinch fight, precisely due to the fact that effective execution requires a fairly good level of skill and especially strength at speed.

Projecting process on the ground and perhaps the best known in Judo, projecting the opponent by unbalancing – O Soto Gari, was evaluated in two ways: the first time it was put into practice with a sparring partner, in the isolated variant – only the process itself, and the second way of testing involved simulating combat beforehand and continuing with the design process on the ground. In this combat test, the experimental group surpassed the control group with a difference of more than 2 points (Figure 3.4), a fact that expresses the significance of the 2 average values at a $P < 0.001$ threshold.

Another type of charge ground design, also a technique from Judo – O Goshi, is a transition technique, which leads the fight to the ground and, obviously, to the neutralization of the opponent. For the execution of the O Goshi procedure, the military fighter must have a good level of physical training, in terms of strength, speed and skill.

In this context, the advanced procedures in Judo are characterized by a higher level of difficulty, especially when we discuss the predominant use of force and counter-force (the force with which the opponent also reacts), but also by complexity and diversity, which derives from the multitude of possibilities and situations that can be encountered in battle, and this fact requires a very careful technical and physical preparation that involves a richer time horizon. Starting from this principle, the experimental group managed to obtain a better average in the evaluation at the end of the third year of study, positioning itself with 1.68 points above the average obtained by the control group. This proves to us the effectiveness of the specific contents of Judo, applied over a longer period of time in the physical training process of the military, a fact that is manifested by a major significance ($P < 0.001$). As with the previous procedure, the evaluation of the level of mastery went through two stages: the execution of the procedure with a free sparring partner - isolated and, subsequently, the implementation of the procedure in combat situations.

The last evaluation area in the combat type testing was intended for ground fighting, where only two very well-known and effective Judo finishing procedures on the ground were selected: the armlock choke - Hadaka Jime and the cross arm dislocation - Juji Gatame or the famous M.M.A.-style Armbar, very often used in organized cage circuit fights.

The mode of assessment for combat is an evolutionary one - it starts with simple combat procedures used in standing combat and, step by step, continues with cliché combat, ground projection and, finally, neutralization of the opponent on the ground.

Technical procedure – Hadaka Jime (strangulation by means of the arms), is a procedure that mainly requires the strength of the arms to perform the strangulation (blocking the airways). This process is one of completion, which occurs in the technical design processes on the ground and near the force, it also requires a lot of skill for favorable positioning in relation to the opponent, in order to carry out the neutralization process.

As with the previously presented procedures, more time is needed to prepare these techniques and combat situations and this fact leads us once again to the success of the experimental group with an average of 8.24 ± 0.16 points against 6.96 ± 0.16 points for the control group, where the difference between these 2 means reaches the significance threshold of $P < 0.01$.

Another technical procedure is the cross dislocation of the outstretched arm - Juji Gtame and presents identical evaluation conditions as the previously presented procedure, being from the same category of fighting techniques. In this case, we need a lot of skill for the favorable positioning to execute the neutralization procedure, the strength of the arms to grab and control

the opponent's arm and body, but also the strength of the whole body to execute the lever to fix the opponent and dislocate his arm.

Due to the allocation of a more favorable time after the duration for learning this element (as in the case of the other elements), where the volume of physical effort increased respectively during the lessons as planned, we also observe in this case an advance of 1.28 points in the experimental group compared to the control, being at the significance level of $P < 0.01$.

Thus, by giving a longer time to the deepening of the technical procedures in the combat disciplines for the military students, a more advanced level of execution was reached in the experimental groups, a fact that indicates that some specific motor capacities were also developed in the technical realization of these elements of fight.

The second step taken to carry out the comparative analysis between the two work systems (the experimental program and the curricular program), consisted in studying the impact on the motor skills of military students, which was recorded by implementing the experimental physical training program using specific means from combat disciplines.

The motor tests, being the most important part of this pedagogical experiment, intervene precisely to demonstrate the effectiveness of the experimental program in capitalizing on the motor skills of military students. In this type of evaluation with physical samples, all 50 students participating in the pedagogical experiment (E. G. and C.G.), went through the same evaluation program, with the same samples (Table 4) and, obviously, in the same working conditions.

Following a brief analysis of the results obtained during the two evaluation stages, it is easy to see that in the initial testing, the results are relatively close, with no significant differences between the two groups of subjects. Visible differences appear, however, at the final testing, when the two groups of subjects are at the end of the third year of study and have already completed the respective physical training programs. Thus, the significant differences presented are expressed by the values calculated for the statistical indicators, which have the role of demonstrating the validity of the experimental program specific to this scientific research and from a value point of view, as well as based on a graphical comparison of the obtained values.

In the 100 m speed running test, the two groups of military students recorded very close mean results, the difference being 0.09 sec. being insignificant ($P > 0.05$), but at the final test the difference of 0.74 sec. constitutes a significance of $P < 0.05$. At the same time, when analyzing the evolution of each group separately, an increase in results can be observed in both groups, but being significant only in the experimental group ($P < 0.01$).

In addition to the development of speed through the training system specific to the experimental program, other factors that led to better results in this test could be reaction capacity for a better start, coordination, attention or focus, abilities that are acquired through training, and especially the specific one from combat disciplines.

In the 3000 m endurance running test, subjects from the two groups registered very close mean values at the initial test, the difference being only 5 sec., which means $P > 0.05$. At the final testing, instead, although the evolution of the two groups was relatively constant, the subjects of the experimental group managed to obtain better time values by 24 sec. compared to the mean recorded by subjects in the control group. This difference is quite significant ($P < 0.01$), especially since the endurance test is a representative test for any type of motor evaluation and especially in the national defense system.

The dynamics of average results and for each group separately is more highlighted in the experiment group, where the increase is 34 sec. ($P < 0.001$), compared to 15 sec. in the control group ($P > 0.05$).

In the case of this physical test, the methods of preparation for the execution of the technical procedures in combat must also be taken into account. Therefore, the military students in the experimental group had at hand several variations during the training sessions with

specific means from the combat disciplines, a fact that constantly mobilized them, while the students in C.G. only performed simple endurance training, which most of the time leads to monotony, a behavioral component that often leads to a negative effect on the final results.

Table 4. Dynamics of the indices for the subjects participating in the pedagogical experiment within the motor tests(n=25)

No. crt.	Assessment test	Group of subjects	Statistical indicators			
			Initial testing	Final testing	The student test	Significance ratio
			C.G./ E.G.	X ±m	X ±m	t
1	The 100 m speed running test (sec.)	C.G.	14,16 ±0,05	13,82 ±0,11	0,85	> 0,05
		E. G.	14,07 ±0,10	13,08 ±0,11	2,15	< 0,01
		t	0,23	1,58	-	-
		P	> 0,05	< 0,05	-	-
2	The 3000 m endurance running test (sec.)	C.G.	953 ±45,20	938 ±53,02	1,51	> 0,05
		E.G.	948 ±32,90	914 ±48,80	3,76	<0,001
		t	0,56	3,18	-	-
		P	>0,05	<0,01	-	-
3	The test of jumping over the gymnastic bench (no. repetitions / 1 min.)	C.G.	34,37 ±3,74	37,40 ±4,00	1,08	>0,05
		E.G.	35,25 ±3,32	44,62 ±4,36	3,38	<0,01
		t	0,33	2,49	-	-
		P	>0,05	<0,01	-	-
4	The push-ups test from lying position (no. repetitions / 2 min.)	C.G.	32,17 ±1,44	34,20 ±0,95	1,30	>0,05
		E.G.	32,37 ±1,06	38,15 ±1,27	3,73	<0,001
		t	0,12	2,35	-	-
		P	>0,05	<0,01	-	-
5	Pull-up test on the fixed bar with supination hold (no. repetitions / 1 min.)	C.G.	7,26 ±2,83	8,94 ±3,00	0,69	>0,05
		E.G.	7,66 ±2,45	12,05 ±2,83	3,08	<0,001
		t	0,17	2,41	-	-
		P	>0,05	<0,01	-	-
6	The test of raising the trunk from lying on the back position (no. repetitions / 2 min.)	C.G.	38,45 ±4,90	43,20 ±5,29	1,48	>0,05
		E.G.	39,15 ±4,58	50,46 ±5,39	3,57	<0,001
		t	0,22	2,22	-	-
		P	>0,05	<0,01	-	-
7	Medicine ball long throwing test (m.)	C.G.	6,25 ±0,10	6,45 ±0,11	0,43	>0,05
		E.G.	6,20 ±0,09	7,25 ±0,12	2,28	<0,01
		t	1,13	1,67	-	-
		P	>0,05	<0,05	-	-
8	Rubber rollover test (no. repetitions / 2 min.)	C.G.	21,31 ±2,65	23,08 ±3,32	0,72	>0,05
		E.G.	22,62 ±2,45	28,37 ±3,16	2,42	<0,01
		t	0,57	2,07	-	-
		P	>0,05	<0,01	-	-
9	Standing long jumping test, 2 successive jumps (m.)	C.G.	3,95 ±23	4,10 ±30	2,06	<0,05
		E.G.	4,00 ±29	4,30 ±31	3,87	<0,001
		t	0,69	2,77	-	-
		P	>0,05	<0,01	-	-

10	The oina ball throwing test for accuracy (no. of points)	C.G.	13,20 ±2,24	15,40 ±2,65	0,99	>0,05
		E.G.	13,34 ±2,83	20,40 ±3,00	2,92	<0,001
		t	0,06	2,10	-	-
		P	>0,05	<0,01	-	-

Note: n = 25 P – 0.05 0.01 0.001
 f (n-1) = 24 t – 2.064 2.797 3.745
 f = 48 t – 2.011 2.682 3.505

The progress demonstrated by the subjects of the experimental group and in the consecutive jumps over the gymnastic bench for 1 minute test, which mainly tests the strength of the legs, was brought about by the multiple and diverse specific exercises and technical procedures from the combat disciplines that influence the level of balance and more chose the body's coordination ability. We have a significant difference of $P < 0.01$ between the two means of the results obtained at the final test, where we obtain for the experimental group 44.62 ± 4.36 jumps, and 37.40 ± 4.00 for the control one.

For the push-ups test from lying face position, a test of arm, chest, and back strength, predominantly, the mean values calculated for the two groups of military students at initial testing are very close, and the difference between them is insignificant ($P > 0.05$). But in the final testing we obtain greater difference between the values calculated for the averages of the two groups of participants in the study, 38.15 ± 1.27 in the experimental group and 34.20 ± 0.95 repetitions, being at a significance of $P < 0.01$.

Following these two tests, a progress of the indices is observed in both groups of students, but after the graphical interpretation of the averages calculated for the two groups, the progress recorded is significant only in the experimental group, where $P < 0.001$.

A good evolution is registered by the experimental group in the dynamics of the average values during the experiment for the pull-up test at the fixed bar with supination hold, from 7.66 repetitions at the initial testing, up to 12.06 repetitions at the final testing, where we have a threshold of significance $P < 0.001$, a fact that can be explained by the application of exercises specific to combat tests in the development of certain muscle groups.

Also, the two groups of subjects had different evolutions in the dynamics of the average values between the two tests, initial and final, in the test " raising the trunk to 90° from lying on the back with hands on the back of the head ". Due to the direct way of the training program in the experimental group, the increase in average values from 39.15 repetitions (initial testing) to 50.46 repetitions (final testing) represents a very significant difference, where $P < 0.001$, while in the control group, although it was recorded a better average value at the end, the difference is insignificant compared to the coefficient of significance $P > 0.05$.

This group of striated muscles, very necessary in some concrete combat military operations, requires continuous training, unlike other large muscle groups, especially since they also have a role in maintaining the balance of the body.

Looking from the perspective of the execution of technical combat procedures, a strength test for the upper limbs and trunk was the long medicine ball throw, from standing position, which develops the specific explosive force necessary for the opponent's control holds and ground projections. Due to the practice of multiple exercises specific to combat disciplines, the dynamics of the results obtained by both experimental groups is much more advantageous for the experimental group, where we have a $P < 0.01$ significance of the difference between the averages obtained at the initial and final testing.

The development of dexterity, explosive strength and endurance by practicing technical procedures and physical training exercises with specific means of combat disciplines led to a better performance of military students in the experimental group also in the Rubber rollover test, which is a test of strength and endurance involving general body strength and coordination.

The difference between the two means of the values recorded at the final test, 28.37 ± 3.16 repetitions for the experimental group and 23.08 ± 3.32 repetitions for the control group, constitutes a positive significance at the threshold of $P < 0,01$.

This strength and endurance exercise is very practical and effective in the physical training of military students and helps develop the explosive strength for hand-to-hand combat and the endurance of military fighters.

Regarding the standing long jumping, 2 consecutive jumps, it was aimed to test the strength of the legs, the relaxation and especially the balance and the general coordination of the body, we find that the exercise is very useful in the applicative-utilitarian missions that the military can receive or helps in situations that require climbing obstacles.

The analysis of the average values of the calculated statistical indicators of the two groups of subjects at the initial test shows us values of 3.95 m in the control group and 4.00 m in the experimental group, with an insignificant difference ($P > 0.05$) in this test. On the other hand, at the final testing, the difference between the 2 average values of the indices obtained becomes significant at the $P < 0.01$ threshold, a fact argued and obtained as a result of the application of means specific to combat disciplines in the preparation of the experimental group.

A faithful simulation of the grenade throwing exercise at a fixed point, only with some adaptation specifications to the existing equipment, was also the oina ball throwing test, which is part of the range of applied-utility exercises and is a test that tests in mostly arm strength and mostly dexterity and precision.

The statistical indicators calculated for this physical event from the set of motor tests, indicate a non-significant difference between the two groups at the initial test ($P > 0.05$), but a different evolution at the final test, where the experimental group detaches with a difference of almost 5 points, significant compared to the control group, within $P < 0.01$.

Thus, making a detailed analysis of the average values obtained as a result of the two sets of motor tests (initial and final), in total, the military students in the experimental group, who went through the experimental program focused on specific means from the combat disciplines, had a much more successful evolution than those in the control group. The evolution of the two groups was not a linear one, referring only to the moment of the final testing. There were tests in which the average values obtained by the two groups of subjects were relatively close and determined significant ($P < 0.01$) or relatively significant ($P < 0.05$) differences, but also there were tests where the student test t obtained as a result of statistical calculations fell within a significance coefficient that demonstrates very significant differences ($P < 0.001$) between the average values of the two groups.

The evolution of the level of motor skills of the two groups of military students, participants in the pedagogical experiment, is also presented through the dynamics of the functional state indices (Table 5), a fact that was analyzed by applying 3 specific tests: the test of physical capacity (cardiovascular) -*The Ruffier test*, endurance test -*The Beep test* and balance and general body coordination test -*Matorin test*.

The purpose of functional status testing was to obtain general information about the level of physical fitness, agility, coordination and balance, endurance, or other relevant characteristics of the military students involved in the experiment. These functional tests were selected because they can be used in different contexts to monitor the progress of the body's motor skills or to be able to identify some areas that need more attention or improvements.

Functional tests can also be very useful in the selection process for team formation or various competitions and, moreover, they can form an objective basis for evaluating physical capabilities in comparison with other subjects or other periods in the training program.

For these reasons, the functional testing of military students constitutes an essential tool in the assessment and development of functional capabilities and skills and contributes directly to the optimization of the military training process for future officers in the armed forces.

Table 5. Dynamics of functional state indices of subjects participating in the pedagogical experiment (n = 25)

No. Crt.	Assessment test	Group of subjects	Statistical indicators			
			Initial testing	Final testing	The student test	Significance ratio
			C.G./E.G.	$X \pm m$	$X \pm m$	t
1	"RUFFIER" physical capacity test (points)	C.G.	2,60 ±0,19	3,04 ±0,17	0,73	>0,05
		E.G.	2,64 ±0,19	3,76 ±0,14	1,96	<0,05
		t	0,06	1,31	-	-
		P	>0,05	<0,05	-	-
2	"BEEP" Endurance test (grade from 1 to 10)	C.G.	5,30 ±0,14	5,60 ±0,14	0,57	>0,05
		E.G.	5,40 ±0,13	6,60 ±0,16	2,22	<0,01
		t	0,19	1,82	-	-
		P	>0,05	<0,05	-	-
3	Coordination and balance test "MATORIN" (points)	C.G.	4,04 ±0,17	4,20 ±0,17	0,28	>0,05
		E.G.	4,08 ±0,17	4,56 ±0,17	0,83	>0,05
		t	0,07	0,62	-	-
		P	>0,05	>0,05	-	-

Note: n = 25 P – 0.05 0.01 0.001
 f (n-1) = 24 t – 2.064 2.797 3.745
 f = 48 t – 2.011 2.682 3.505

The first test in functional testing is the Ruffier physical (cardiovascular) capacity test, also known as the Ruffier-Dickson test (Figure 6). It is a very simple method of evaluating the level of physical condition and cardiovascular recovery, being used especially in the field of sports medicine.

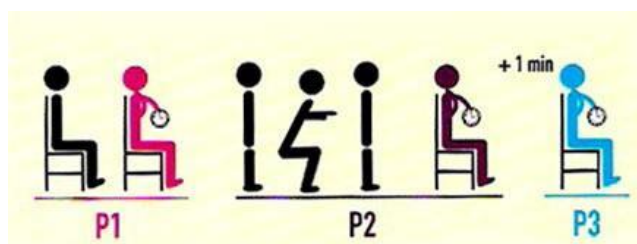


Fig. 6. Measurement technique for the physical capacity test "RUFFIER"

The analysis of the values recorded in the Ruffier test (Figure 7) demonstrates a good evolution for the experimental group, which obtained an average value of 3.76 points at the final test, and 3.04 points for the control group. The difference between these 2 average values of 0.72 points represents a superiority of the indices obtained in the experimental group, being relatively significant, where $P < 0.05$. At the time of initial testing, however, the two groups recorded very close average values showing a non-significant difference, where the value of $P > 0.05$.

The evolution of each individual group between the initial and final testing also shows a more pronounced increase in the indices of the experimental group, from 2.64 to 3.76 points, which falls at the significance threshold of $P < 0.05$. For the control group these values were

lower, with a value calculated for $t = 0.73$, which corresponds to an insignificant correlation coefficient, where $P > 0.05$.

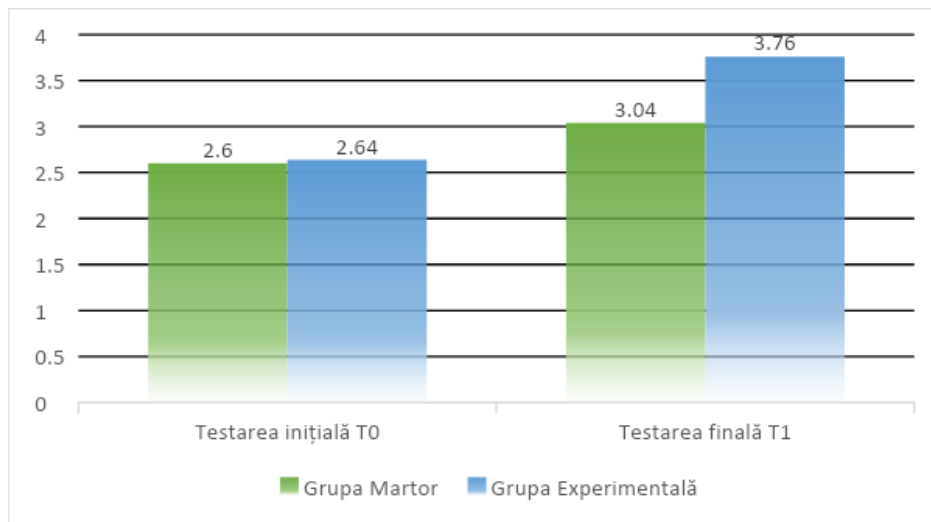


Fig. 7. The results obtained in the physical capacity test “RUFFIER”

For this stage of functional testing, of the present research, it was chosen to perform the Ruffier physical capacity (cardiovascular) test, preceding the BEEP endurance test (Figure 8), as a small safety measure and to observe the fitness level of the subjects .

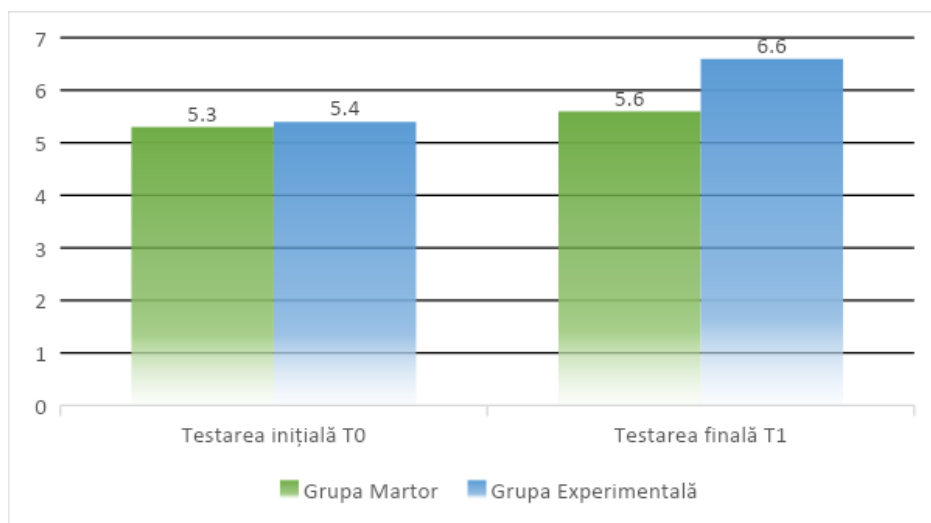


Fig. 8. The results obtained in the endurance test „BEEP”

Through the BEEP endurance test [7; 35], which is a test of cardiovascular capacity, aimed to measure the aerobic capacity and endurance of the military students participating in the experiment. As previously presented, the BEEP endurance test involves running between two lines arranged at a distance of 20 m, in a periodically decreasing time interval, announced by a sound signal (hence the name BEEP Test).

For a more accurate assessment and correct assessment of this test, which has some similarities with the endurance running test over the distance of 3000 m, some comparisons and correlations were made between the two tests (Appendix 1). Thus, the BEEP endurance test was evaluated with grades from 1 to 10, but the main criterion was to obtain a minimum grade of 5, in order to pass the test.

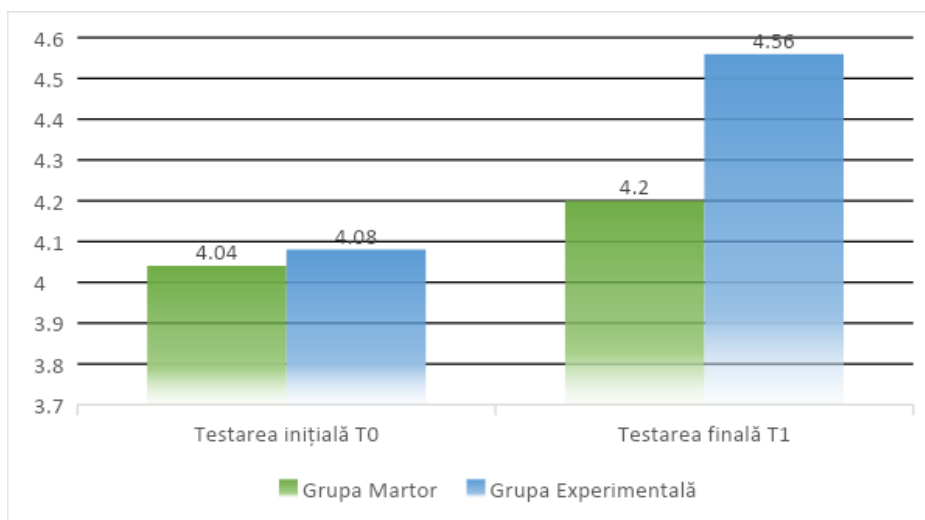
The statistical analysis of the results obtained in this test indicates very small differences between the averages of the two groups of subjects, at the initial testing, where the indicator t fits the $P > 0.05$ coefficient, which indicates insignificant differences. In the final testing, the average value in the experimental group is higher by 1 point compared to the average of the control group, the difference between these 2 average values being significant and $P < 0.05$.

On the other axis of the results, we observe an insignificant evolution, where $P > 0.05$ for the subjects of the control group in the two tests, initial and final, while the difference between the average values obtained by the subjects of the experimental group, who completed the program experimental, is a significant one, where the indicator t fits a coefficient $P < 0.01$.

The average values of the indices obtained in this case by the military students in the experimental groups are due to the practice of multiple exercises specific to combat disciplines, which positively influenced the endurance capacity.

The Matorin Test was used to evaluate the level of general coordination and body balance, being the last test in this set of tests.

The statistical data obtained in this test, as presented in Table 5 and in the graphic representation in Figure 9, do not indicate significant differences in the evolution of the two groups, neither at the initial test, nor at the final one, nor as the evolution of each group, individually, from one test to the other, registering a significance coefficient $P > 0.05$.



Beg. 9. Results obtained in the body coordination and balance test "MATORIN"

In fact, the Matorin balance and coordination test is not a tie-breaker in this research, but rather, it indicates that the military students participating in the experiment have a good functional state, ranked in standard parameters and are fit to complete the tests physical characteristics specific to the pedagogical experiment.

At the same time, the results obtained in the assessment of the level of functionality of military students confirm the consistent contribution of specific means from the combat disciplines, applied in the process of their physical training throughout the year.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Starting from the selection and analysis, but also the design, determination and interpretation of the theoretical and experimental components and continuing with the statistical data resulting from the pedagogical experiment, the process of their quantitative and qualitative processing, it can be concluded that:

1. Following the research and analysis of the specialized literature in the field of experimental study related to this PhD thesis, it can be noted that:

- there is a theoretical and methodological basis for the training of skills in the area of military physical training, and above all a relatively vast legislative basis, which regulates this field of activity with multiple laws and military orders regarding the methodological standards for carrying out the activity of military physical training;

- at the same time, these standard acts also highlight the mandatory status of physical training in military training programs and of self-defense training themed lessons, even if they are present to a much smaller extent than they should be;

- this regulatory legislative framework, however, is no longer up-to-date and adapted, referring predominantly to the development of general motor capacities and less adapted to the application-utilitarian needs in theaters of operations;

- the specific theoretical and methodological bases for the training of military physical training skills in military institutions of higher education are still not adapted to the requirements imposed by modern military missions, and military physical education lessons are carried out stereotypically and the necessary attention is still not given to training the military for hand-to-hand combat, with or without the light weapons provided.

2. The development and application of the two opinion questionnaires addressed to teachers or personnel responsible for military physical education from various military educational institutions and to military students from the "Ferdinand I" Military Technical Academy, in order to identify some objectives to be followed in military physical education lessons in order to optimize the physical training activity, they highlighted the following aspects:

- the mandatory status regarding military physical training activity is unanimously accepted and supported;

- the didactic process regarding military physical training must be improved through modernization, adaptation to the new challenges imposed by the battlefield and diversification of activities to eliminate stereotypy and monotony;

- there is openness and interest towards the practice of combat disciplines at a much more advanced level, within the military physical education lessons, and also the unanimous opinion is that this alternative is effective and presents many advantages;

- the time allocated for learning, deepening and implementing the technical-tactical elements of combat in the general process of military physical training, regulated by the legislative framework specific to the military environment, is insufficient.

3. The level of motor development of the group of military students in the ascertaining experiment, based on the results obtained, is rated as "satisfactory", a fact that does not fully meet the current physical training requirements of a contemporary military. This framing of the recorded results requires some changes in the physical training program of military students through aspects of modernization and diversification in the training process regarding specific physical training in military physical education lessons.

4. The experimental program developed in order to carry out this scientific study, which aims to capitalize on the motor skills of military students, is totally focused on the use of methods and means specific to combat disciplines and has as its purpose an essential increase in the level of motor skills of military students, which can be evaluated at the end of the year with

at least the qualification "good" and have a baggage of knowledge and technical-tactical combat skills as wide as possible, which can be used in various professional situations.

5. The analysis of the results recorded when testing knowledge and technical combat skills indicates considerable differences in the evolution of the two groups of students, where the military students in the experimental group obtained much better grade averages, between 8.24 - 9.20, compared with the students from the control group, where the grades were between 6.32 and 7.36, for the 7 technical combat procedures. The differences between most of the recorded statistical indicator values indicate a significance coefficient favorable to the experimental group, where $P < 0.001$.

6. The results recorded for the 10 physical tests from the motor tests demonstrate a positive dynamic of the indices obtained in both groups of military students, between the time of the initial testing and that of the final testing, but significant in most cases in the experimental group, an explainable fact through the effective planning and application of means from the combat disciplines during the academic year.

Significant dynamics were seen in the 3000m endurance running (from 948 sec to 914 sec), lying face down push-ups (32.37 to 38.15 repetitions) and pull-up test at the fixed bar with supination hold (7.66 to 12.05 repetitions), a fact that demonstrated the correct selection of technical procedures from the combat disciplines, having a direct influence on the increase in the motor skills of the military students in the experimental group.

7. The efficient use of means from the combat disciplines within the pedagogical experiment with the students of the experimental group directly led to the improvement of their functional state indices.

Physical ability test "RUFFIER" gets 3,76 points at the end of the pedagogical experiment in the experimental group compared to 3.04 points in the control group, a fact that determines a coefficient of positive significance ($P < 0.05$). Something more pronounced in the increase we obtained in the indices of the "BEEP" endurance test from the grade 5.60 for the control group, up to 6.60 for the experimental group, where the significance reaches values of $P < 0,01$.

8. The comparative analysis of the results obtained by the military students from the two groups, participants in the pedagogical experiment, clearly highlights the fact that the specific physical training process within the "Ferdinand I" Military Technical Academy, respecting the working procedures and principles specified in the experimental program, which is the object of this scientific research, supports the achievement of the general and specific objectives of the military physical training activity. Also, the experimental curriculum related to this scientific study, with all the means and methodological elements specific to combat disciplines, proves that it is an effective alternative and can be successfully implemented in physical education lessons in the military training process.

The results obtained that contribute to the solution of the important scientific problem in the thesis consist in the scientific and methodological substantiation of training motor skills specific to combat disciplines, which contributed to an essential increase in the level of motor skills of military students, which is very important and necessary in their professional activity.

The previously formulated conclusions, related to the cumulative results obtained following the completion of the pedagogical experiment, are also completed by a set of recommendations intended to contribute to the improvement and increase of the professionalism level of the physical training process of students in military educational institutions, namely:

1. The military cadres empowered to make decisions, following consultations with the military physical education specialists, to regulate the standards for carrying out the activity of specific physical training by granting a larger budget of time within the general training programs;

2. Leaders of military physical training activities to take continuous measures to equip, modernize and technology the sports complexes where they operate, by attracting funds or implementing projects with non-reimbursable financing;

3. The development of strong partnerships with professional sports federations, in order to ensure the physical training process of the military with cadres qualified in combat training in military physical education lessons with a self-defense profile, but also for the development of continuous teams training programs for military competitions with a combat profile;

4. It is recommended to restructure the Military Physical Education discipline sheet regarding the choice of work topics for each year of study in order to increase the motor skills of military students by selecting modern and diverse work methods in teaching the specific contents of combat disciplines throughout the year, supplementing them with fitness, crossfit, calisthenics or application-utility exercises, necessary in their professional activity;

5. Elaboration and editing of methodological guides regarding the organization of military physical education lessons with military students, regarding physical training by applying the means specific to combat disciplines during the academic year (mixed martial arts), through which they have advanced knowledge of combat in all techniques of combat (standing combat, design and ground combat, combat with weapons), a fact that would facilitate the activity of teaching staff from other educational institutions with a military profile.

The investigation carried out opens up multiple research perspectives, which would aim at the in-depth study of all the components of physical training with military students, at the same time creating premises for carrying out more detailed research on the impact of the means of contemporary combat disciplines on the motor skills of future officers of the national army.

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ADNOTARE

Enăchescu Valentin-Sorin *Valorificarea motricității studenților militari prin intermediul disciplinelor de combat: teză de doctor în științe ale educației. Chișinău, 2023.*

Structura tezei: lucrarea este alcătuită din: adnotare (în limba română/rusă/engleză), lista tabelor, lista figurilor, lista abrevierilor, introducere, 3 capitole, concluzii generale și recomandări, bibliografie din 217 de surse, 9 anexe, 17 tabele, 64 de figuri, 141 de pagini de text de bază.

Cuvinte-cheie: studenți militari, educație fizică militară, pregătire fizică specifică, calități motrice, capacitate motrică, discipline de combat, program de pregătire în combat.

Scopul lucrării constă în modernizarea și optimizarea procesului didactic în activitatea de educație fizică militară prin valorificarea a motricității studenților militari în baza mijloacelor specifice adaptate disciplinelor de combat.

Obiectivele cercetării:

1. Identificarea aspectelor metodologice ale educației fizice militare și utilizarea mijloacelor disciplinelor de combat în creșterea motricității studenților militari în baza analizei și sintezei literaturii de specialitate;

2. Analiza opiniilor personalului din mediul militar cu privire la modul actual de desfășurare a activității de pregătire fizică de specialitate și posibilitatea de implementare a unui program de lucru bazat pe mijloace specifice disciplinelor de combat;

3. Evaluarea nivelului general de motricitate al studenților militari și elaborarea programei experimentale axată pe mijloace specifice disciplinelor de combat;

4. Argumentarea experimentală a utilizării mijloacelor specifice disciplinelor de combat în valorificarea nivelului de motricitate a studenților militari.

Noutatea și originalitatea științifică constau în modernizarea, diversificarea și eficientizarea procesului de pregătire fizică specifică, prin implementarea în cadrul lecțiilor de educație fizică militară, a unei programe alternative, axată pe mijloace specifice disciplinelor de combat.

Rezultatele obținute care contribuie la soluționarea unei probleme științifice importante constau în argumentarea experimentală a eficienței programei de pregătire fizică militară în cadrul lecțiilor de educație fizică cu privire la creșterea motricității studenților militari în baza aplicării conținuturilor specifice disciplinelor de combat.

Semnificația teoretică este evidențiată prin stabilirea și fundamentarea bazei conceptuale și metodologice privind educația fizică militară, prin implementarea mijloacelor specifice din disciplinele de combat, în cadrul procesului didactic.

Valoarea aplicativă este demonstrată prin posibilitatea utilizării mijloacelor, a rezultatelor cercetării și a programei experimentale, în vederea optimizării și modernizării procesului didactic de valorificare a motricității studenților militari. Programa poate fi propusă spre implementare în procesul de instruire și formare continuă a personalului instituțiile militare de învățământ.

Implementarea rezultatelor științifice: rezultatele cercetării științifice au fost utilizate în vederea optimizării procesului de pregătire fizică specifică, prin implementarea programei în lecțiile de educație fizică militară desfășurate în cadrul Academiei Tehnice Militare "Ferdinand I".

АННОТАЦИЯ

Енэжеску Валентин-Сорин: Развитие двигательных качеств студентов военных вузов посредством боевых дисциплин: диссертация на соискание звания доктора педагогических наук. Кишинэу, 2023.

Структура диссертации. Работа состоит из: аннотации (на румынском, русском и английском языках), списка таблиц, списка рисунков, списка сокращений, введения, трёх глав, общих выводов и рекомендаций, списка литературы из 217 источников, 9 приложений, 17 таблиц, 64 рисунков, 141 страниц основного текста.

Ключевые слова: студенты военных вузов, военное физическое воспитание, специальная физическая подготовка, двигательные качества, двигательные способности, военные (боевые) дисциплины, программа подготовки в боевых дисциплинах.

Цель работы состоит в модернизации и оптимизации учебного процесса по военному физическому воспитанию путем использования двигательных качеств студентов военных вузов на основе специальных средств, адаптированных для боевых дисциплин.

Задачи исследования:

1. Выявление методологических аспектов военного физического воспитания и использование средств боевых дисциплин в повышении двигательных качеств студентов военных вузов на основе анализа и синтеза специальной литературы.

2. Анализ мнений сотрудников военных структур относительно существующего способа проведения специальной физической подготовки и возможности внедрения рабочей программы, основанной на средствах боевых видов спорта.

3. Оценка общего уровня двигательных качеств студентов военных вузов и разработка экспериментальной программы, основанной на средствах, специфичные для боевых дисциплин.

4. Экспериментальное обоснование применения средств боевых видов спорта для повышения уровня развития двигательных качеств студентов военных вузов.

Новизна и научная оригинальность исследования заключаются в модернизации, диверсификации и повышении эффективности процесса специальной физической подготовки путем внедрения на уроках военного физического воспитания альтернативной программы, основанной на средствах боевых видов спорта.

Полученные результаты, способствующие решению важной научной задачи состоят в экспериментальном обосновании эффективности программы по военной физической подготовке на уроках физкультуры, направленной на повышение двигательных качеств студентов военных вузов на основе применения содержания боевых видов спорта.

Теоретическая значимость работы обусловлена определением и обоснованием концептуальных и методологических основ военного физического воспитания, путем внедрения в учебный процесс средств боевых видов спорта.

Прикладная значимость доказана возможностью использования средств, результатов исследования и экспериментальной программы, направленной на оптимизацию и модернизацию учебного процесса с целью повышения двигательных качеств студентов военных вузов. Программу можно предложить для внедрения в процесс обучения и непрерывной подготовки личного состава в высших учебных заведениях военного профиля.

Внедрение научных результатов: результаты научных исследований были использованы для оптимизации процесса специальной физической подготовки, путем внедрения разработанной нами программы на уроках физкультуры, проведенных в Военной технической академии «Фердинанд I».

ANNOTATION

Enăchescu Valentin-Sorin *Capitalizing of the military students' motricity through combat disciplines: PhD thesis in Education Sciences. Chişinău, 2023.*

Structure of the thesis: the paper consists of: annotation (in Romanian/Russian/English), list of tables, list of figures, list of abbreviations, introduction, 3 chapters, general conclusions and recommendations, bibliography of 217 sources, 9 appendices, 17 tables, 64 of figures, 141 of basic text pages.

Keywords: military students, military physical education, specific physical training, motor skills, motor capacity, combat disciplines, combat training program.

The purpose of the work: consists in the modernization and optimization of the didactic process in the activity of military physical education by capitalizing of the military students motricity based on specific means adapted to combat disciplines.

Research objectives:

1. Identifying the methodological aspects of military physical education and the use of the means of combat disciplines in increasing the military students' motricity based on the analysis and synthesis of specialized literature;
2. Analysis of the opinions of military personnel regarding the current way of carrying out specialized physical training activities and the possibility of implementing a work program based on means specific to combat disciplines;
3. Evaluation of the general level of military students' motricity and the development of the experimental program focused on means specific to combat disciplines.
4. Experimental argumentation of the use of combat disciplines means in capitalizing on the level of military students' motricity.

Scientific novelty and originality: consists in the modernization, diversification and efficiency of the specific physical training process, by implementing an alternative program within the military physical education lessons, focused on means specific to combat disciplines.

The results obtained that contribute to the solution of an important scientific problem consist in the experimental argumentation of the effectiveness of the military physical training program within the physical education classes regarding the increase in the military students motricity based on the application of the specific contents of combat disciplines.

Theoretical significance is highlighted by establishing and substantiating the conceptual and methodological basis regarding military physical education, by implementing specific means from combat disciplines in the didactic process.

Application value is demonstrated by the possibility of using the means, the results of the research and the experimental program, in order to optimize and modernize the didactic process of capitalizing the military students' motricity. The curriculum can be proposed for implementation in the process of teaching and continuous training of personnel in military educational institutions.

Implementation of scientific results: the results of the scientific research were used in order to optimize the specific physical training process, by implementing the curriculum in the military physical education lessons held at the "Ferdinand I" Military Technical Academy.

ENACHESCU VALENTIN – SORIN

***CAPITALIZING OF THE MILITARY STUDENTS' MOTRICITY THROUGH COMBAT
DISCIPLINES***

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