STATE UNIVERSITY OF PHYSICAL EDUCATION AND SPORTS

With manuscript title
C.Z.U: 796.015:355+614.8(043)

LOLUȚĂ Adrian Gabriel

PHYSICAL TRAINING OF MILITARY FIREFIGHTERS WITHIN THE FRAMEWORK OF THE PROFESSIONAL SERVICES FOR EMERGENCY SITUATIONS

Specialty: 533.04. Physical education, sport, physiotherapy and recreation

Summary of the doctoral thesis in education sciences

CHIŞINĂU, 2023

The thesis was developed at the Doctoral School of the State University of Physical Education and Sports

Composition of the Commission for public support of the doctoral thesis:

1. **BUFTEA Victor**, habilitated doctor in pedagogical sciences, university professor, State University of Physical Education and Sport - president of the commission
2. **CHIRAZI Marin,** doctor in pedagogical sciences, university professor, "Alexandru Ioan Cuza" University, Iași, Romania - scientific supervisor
3. **JURAT Valeriu,** doctor in pedagogical sciences, university professor, State University of Physical Education and Sport, Chișinău - member
4. **ENE-VOICULESCU Virgil,** habilitated doctor in physical education and sport, university professor, Naval Academy "Mircea cel Bătrân", Constanța, România - official referent
5. **GALAN Doru,** PhD in physical education and sport, associate professor, "Wallachia" University, Târgoviște, Romania - official referent

The thesis will take place on 28.06.2023, at 11.00, aud. 105, in the meeting of the Commission for public defense of the doctoral thesis within the State University of Physical Education and Sports of the Republic of Moldova (Doga A. 22, str. Chisinau, MD-2024).

The doctoral thesis and the summary can be consulted at the Library of the State University of Physical Education and Sports and on the ANACEC website.

President of the Public Defense Commission
Buftea Victor, dr. habil. in pedagogical sciences,
university professor

Scientific leader
Chirazi Marin, doctor of pedagogical sciences,
university professor,
Author: Loluţă Adrian Gabriel

CONTENT

CONCEPTUAL MILESTONES OF THE RESEARCH

Actuality and importance of the topic addressed. The diversification and multitude of missions in which military firefighters participate in the professional services for the coordination of emergency situations in the last 20 years and in order to adapt to the exponential increase in non-military risks, against the background of increased globalization, climate changes, the diversification of economic fluctuations and the production of natural disasters, requires a very good continuous training both through the development of the physical condition and through the development of specialized skills, because an interruption of the continuity of the training would lead to the registration of professional failures, at the same time tarnishing the image of the institution.

Now, the field of activity is greatly expanded around endangering human life, and citizens have become accustomed to calling 112, the single call number for emergency situations, in almost any situation, and this implies the assumption of additional responsibilities through a growing number of activities specific to professional emergency services.

A particularly important structure subordinate to the Ministry of Internal Affairs, within the system of public order and national security, is represented by the I.G.S.U. (General Inspectorate for Emergency Situations), which came into being in 2004 by merging the Civil Protection with the Military Firefighters Corps [32].

The training of military firefighters aims to fulfill the following operational requirements:

- increasing the effectiveness of the system, by ensuring an adequate response of the emergency services determined by the training and development of certain skills specific to the types of intervention;
- the level structuring and correct dimensioning of the training and training system for military firefighters;
- joint training of military personnel from professional emergency services, voluntary and private emergency services, as well as volunteers;
- standardizing the application of intervention procedures and techniques for all types of risk.

The continuous professional training of military personnel within the operative subunits subordinate to the county inspectorates is carried out on three levels, by training category, as follows:

- specialized training [27];
- firing weapons;
- physical training.

Physical education has several subsystems[23], among which we mention military physical education.

Military physical training [10], being a component of general physical education, is carried out through the following forms of development:

- ✓ military physical training sessions, in the training program, specific to each subunit;
- ✓ individual physical training [1];

Regarding military physical training, most of the works in the field focus on the physical training of the cadres of the national defense system and to a lesser extent on the physical training of the military cadres of the public order system, although, in the composition of the latter , includes many categories of personnel: policemen, gendarmes, firefighters, civilians, etc. [16; 25].

I.G.S.U. and the county inspectorates have a number of 42 county operational centers and over 280 operational structures of firefighters [33].

The necessary staff is provided by the following specific training institutions, as follows: within the "Alexandru Ioan Cuza" Police Academy in Bucharest, officers are trained at the Fire Department, and at the "Pavel Zăgănescu" NCO Fire and Civil Protection School in Boldești , non-commissioned officers are being trained [34; 36].

The physical training of military firefighters constitutes the integrated part of the instructional-educational process that is carried out within the continuous training program for the successful fulfillment of the missions and attributions of the job description.

In our case, the topic is the military firefighter, and the references focus on military physical training in general and firefighter physical training in particular.

Bibliographic resources in the field of physical training, so necessary within this system, are found in the form of orders or regulations [24; 26; 28], the specialized literature being, unfortunately, precarious and mostly dealing with the physical training of policemen and gendarmes, where the topics are focused in particular on athletics, gymnastics, sports games and self-defense, with firefighters having to, in many cases, borrow forms and training means specific to other weapons. The specific physical training of military fire fighters is considered to be a component of the training stage within the intervention subunits, but also of the education process within the training institutions for military fire fighters.

It is essential to state that, regardless of the emergency situation that arises, military firefighters will not be able to fulfill their mission duties without acquiring practical skills in using all categories of accessories and intervention materials, if they do not acquire the techniques to act in the regime of speed, endurance, skill, coordination, strength, often in the context of temporary

isolation, particularly difficult and even dangerous conditions, all against the background of an exceptional physical condition. These aspects were identified in the personal professional activity and led to the choice of the theme.

The purpose of the research: it consists in the optimization of the physical training activity within the mandatory continuous training program of military firefighters, by diversifying and customizing the training content with means adapted to the specifics of the weapon, carried out with intervention-specific equipment.

Research objectives: studying legislative and methodological concepts regarding the optimization of the training process within the general and specific physical training of military firefighters on a national and international level; analysis of the opinions of military personnel regarding the deployment, material basis and content of the physical training process at the inspectorate level; analysis of the motor capacity level of military firefighters; elaboration of the content of the experimental program focused on means adapted to the specifics of the weapon executed in the equipment during the interventions; arguing and exploiting the effectiveness of the content of the experimental program for the specifics of the weapon in order to increase the level of physical training of military firefighters within the professional services for emergency situations**.**

Research hypothesis. It is assumed that by diversifying and adapting the content of the physical training program using sports games, dynamic games, applied routes performed in the equipment specific to the interventions as means, it will contribute to the optimization of the continuous training process of professional training, as well as to the improvement of the health status of firefighters military.

Research methods. In the process of developing the thesis, a series of general methods were used, such as the specialized literature analysis method, the historical method, the statistical-mathematical method, but also specific research methods, such as the pedagogical experiment method, the survey method, etc. , as well as evaluation and testing methods.

The novelty and scientific originality consists in perfecting the physical training of military firefighters by diversifying the content of the training program for military personnel within the inspectorate during continuous training, adapted to the requirements during emergency situations, by adapting some means from sports games, dynamic games, organized in application routes, carried out under the specific conditions of the interventions.

The results obtained that contribute to the solution of an important scientific problem consist in strengthening, from a theoretical and experimental point of view, the optimization of the

physical training of military firefighters, by imitating the conditions during the interventions, transposed by diversifying the means of training implemented in the curriculum developed in this sense.

The theoretical meaning aims at the theoretical argumentation of the special conditions during the interventions and the inclusion in the mandatory physical training program of the military personnel from the units and sub-units of firefighters during a year of training.

The applicative value consists in the possibility of using the results of the study, of the experimental program, to optimize the physical training of the military firefighters within the county inspectorates. The syllabus could be used in the process of training and continuous professional training of military firefighters from firefighting units and sub-units, during a year of training.

Implementation of scientific results: the research results were applied in order to optimize the physical training of military firefighters, being implemented in the process of continuous training of military personnel, as well as in the competitive training of sports teams within the "Nicolae Iorga" County Emergency Situations Inspectorate Botoșani, Romania.

The volume and structure of the thesis. The work consists of: introduction, three chapters, general conclusions and recommendations, bibliography from 210 sources, 14 appendices, 128 pages of basic text, 39 figures, 17 tables. The obtained results are published in 10 scientific papers.

Key words: military firefighters, adapted physical training, intervention-specific equipment, motor capacity.

THESIS CONTENT

In the **Introduction**, the actuality of the topic addressed and the importance of the research are argued. Thus, the purpose and objectives of the work are specified, emphasizing the elements of scientific novelty of the results obtained; the synthesis of the research methodology and the justification of the research methods on the topic addressed; the method of approving the research results.

In **Chapter 1, „Theoretical argumentation and analysis of the methodology of the physical training of military firefighters within the professional services for emergency situations”**, the objectives and regulations for the implementation of military physical training are presented, in which the conceptual framework of military physical training is described and studied, as well as the competitive system within the structures of professional services for

emergency situations. The methodological aspects of organizing and conducting physical training on a national and international level are presented. The content elements of the annual physical training plan were also highlighted, a comparison was made of the level of the evaluation system for physical training for military firefighters from Romania and other countries using the current normative documents, as well as the trends regarding the physical training of firefighters [22; 29; 30]. At the same time, studies and researches from abroad were analyzed that have in mind the same concerns of optimizing the professional training of military firefighters.

The analysis and interpretation of the information from the profile research in our country, regarding the physical training of military firefighters within the professional services for emergency situations, showed us that so far a small number of scientifically based studies have been carried out regarding improving the physical training process [11].

The ways of performing physical exercises in the physical training program, the methods applied in the military training process of firefighters [7], fail to fully satisfy the need for motor activities for military firefighters. The link between the physical training of military firefighters and their theoretical knowledge is at a low level, a fact that could have an influence on the maintenance of health, for the successful performance of the attributions and missions entrusted to them.

The main concerns of foreign researchers are directed towards three general directions: the state of health of military firefighters (the risk of intoxication and overweight); increasing the capacity for anaerobic effort; diversification of equipment and means of action in carrying out general and specialized physical training [19; 20; 21].

Chapter 2 of the thesis, with the title **„The influence of the means of action on the physical training of military firefighters within the professional services for emergency situations"** contains the presentation of the research methods and the description of the evaluation samples, related to the requirements of the drawn-up experimental program and presents subjects involved in the implementation pedagogical experiment. Based on the sociological survey, the training needs in the training process at the physical training sessions of military firefighters were determined.

As part of the pedagogical experiment, which was carried out in 2 stages, we are discussing an ascertainment stage, when a number of 321 subjects (military firefighters) were evaluated, from the operative subunits of the inspectorate, and the stage of verifying the independent variable with a number of 80 military firefighters (on duty) from the two subunits, aged up to 35 years, respectively 40 military firefighters from the experimental group from the Botoșani Fire

Department and 40 military firefighters from the control group from the Dorohoi Fire Department from duty shift. The opinions of the participating military personnel were analyzed through a sociological study, regarding the optimization of the physical training process at the level of the inspectorate. The level of general physical training, specialized physical training and some physiological indicators of the sample of military firefighters on duty was evaluated and the experimental program of specialized physical training based on the use of intervention equipment in the practice of selected means from sports games was developed. dynamic games, as well as physical exercises organized in the form of application routes.

The analysis of the opinions of the military personnel regarding the conditions for carrying out the physical training process at the level of the inspectorate highlights positive assessments, their preferences for certain sports disciplines, about the way of organizing and conducting military physical training sessions, about the effects of physical exercises on the human body, last but not least, the interest in developing and perfecting basic and specific motor qualities, basic elements in their training as future rescuers. The respondents also stated that by diversifying the content and means of training, it is possible to contribute to the improvement of the training program. The sociological study also revealed aspects that can be improved, such as those related to the lack of sports facilities and materials necessary for physical training, as well as the lack of motivation of the staff engaged in training. So we can affirm the fact that military firefighters actively participate in the physical training program and do not oppose the status of its mandatory professional component.

The evaluation of the level of general and specialized physical training of the sample of military firefighters on duty compared to the results obtained against the standard norms provided by the legislation in force is good, reflecting an average level of the requirements stipulated in the job description. Thus, good results were obtained, both in the running tests and in those evaluating strength and endurance. Since a rather low coefficient of variability was registered, it proves to us, once again, that military firefighters have actively participated and are interested in their continuing professional training. At the same time, it is noted that at the moment there is an increased tendency to increase the weight of military firefighters, due to an unhealthy lifestyle, an unbalanced diet and daily stress.

The monitoring of physiological indicators (heart rate, VO2 max, spirometry, BMI) represents the advantage of correlating them with the indicators of motor capacities, but also a possibility of ascertaining the deterioration of the state of health.

The experimental program was planned for a year of training and consisted of applying the selected means and performing them with the intervention equipment, adapted to the specifics of the weapon in order to develop the motor capacities to higher indices, in the subjects of the experimental group.

Taking into account the opinion of military firefighters, the experimental program through the proposed theme ensured diversification and implicitly increased the attractiveness of specific means in all parts of the physical training session for the entire year of continuous training of military personnel.

The analysis of specialized literature provided us with information regarding the diversification and individualization of means of action, which allowed us to choose, adapt and use the most suitable specific means from athletics, gymnastics, sports games (football, basketball, handball, etc.) [13; 14] bodybuilding, as well as specialized topics for the operative personnel within the intervention subunits (applicative routes and weapon-specific exercises).

It should be stated that all the previously mentioned means were carried out, within the experimental program, by using the specific intervention equipment (helmet, mask, suit/jumpsuit, boots) by the military firefighters. Through this aspect, the following were pursued:

- increase in body temperature;
- the difficulty of the respiratory cycle;
- adaptation of the body to conditions of reduced oxygen supply;
- increased sweating as a result of the body's need for thermoregulation.

All the conditions presented previously resulted from the analysis of the specific conditions encountered by the military firefighters in emergency interventions. In emergency situations, military firefighters have to face the physical effort imposed by the particular context: moving at maximum speed over short distances; frequent climbing of steps, carrying of weights (specific equipment, victims, etc.) in the context of using specific professional skills.

These aspects, encountered in the practice of the military firefighter profession, were the basis for the design of means of action within the physical training program, which are based on the use of the equipment used in interventions but, at the same time, have the role of diversifying the activity .

The weight of these means in the planning is established by the specialist officer with physical training, depending on the training needs, the possibilities and particularities of the intervention unit/subunits, respecting the percentages of time allocated for the category of physical training (general/specialty), depending on the physical demand class and includes tasks and

exercises adapted to the material base and sports equipment existing in each place of activity, in order to train and develop the motor capacities of military firefighters.

The designed experimental program is the document that presents the activities that will be carried out in quantitative form of the means carried out in the intervention equipment, adapted to the specifics of the weapon for: maintaining and developing motor capacities, acquiring some applied and specific skills, maintaining and increasing the state of health, even for the accumulation of theoretical information. We also mention the fact that in physical training we have introduced common elements with those in sports training, because military firefighters also have the opportunity to participate in sports competitions addressed to them (contests/competitions at county, national and international level) representing the institution [15; 31].

The annual physical training plan for military personnel is based on the planning of the means carried out with the intervention-specific equipment, adapted for each season, respectively the distribution of homework/sessions by months/weeks/days.

Considering the results obtained in the sociological questionnaire, where the operational staff stated that they would have recommended a greater number of hours allocated within the physical training sessions, that a diversification of the types of activities taught by the instructors is necessary, determined the design of a program of means of action in intervention-specific equipment, adapted to the specifics of the weapon during one year of training (Table 1).

Table 1.The share of means in the experimental program adapted to the specifics of the weapon

No. Crt.	Compound %	Means used	Percent of %	Semester weight		Total hours
				Spring/summer season	Autumn/winter season	
1.	General training 28,80%	Athletics	11,70	18	16	34
2.		Gymnastics	7,20	6	14	20
3.		Sports Games	9,90	16	12	28
4.	Specialized training 40,50%	Weapon specific exercises	21,60	31	31	62
5.		Motor circuits	12,60	18	18	36
6.		Bodybuilding	4,50	6	6	12
7.		Swimming	1,80	2	2	4
8.	Adapted training with specific equipment 30,70%	Games	5,40	10	8	18
9.		Applied motor routes	12,60	19	19	38
10.		Bodybuilding	5,40	8	8	16
11.		Gymnastics	4,50	4	8	12
12.	Assessment		2,80	4	4	8
13.	Total hours			**144**	**144**	**288**

Note: For the best possible efficiency, a minimum of 75% of the program must be completed.

Also, the experimental program includes the weight of activities in the context of physical training. During the physical training sessions, the most often used was the theme resulting from

the physical training with the intervention equipment, adapted to the specifics of the weapon (PFASA) and specialized physical training (PFS). The result of the weighting of the components of the experimental program, after the distribution within a year of training, highlights a total of 28.8% general physical training (PFG), 40.5% specialized physical training and 30.7% physical training with equipment intervention, adapted to the specifics of the weapon (PFASA) according to Figure 1.

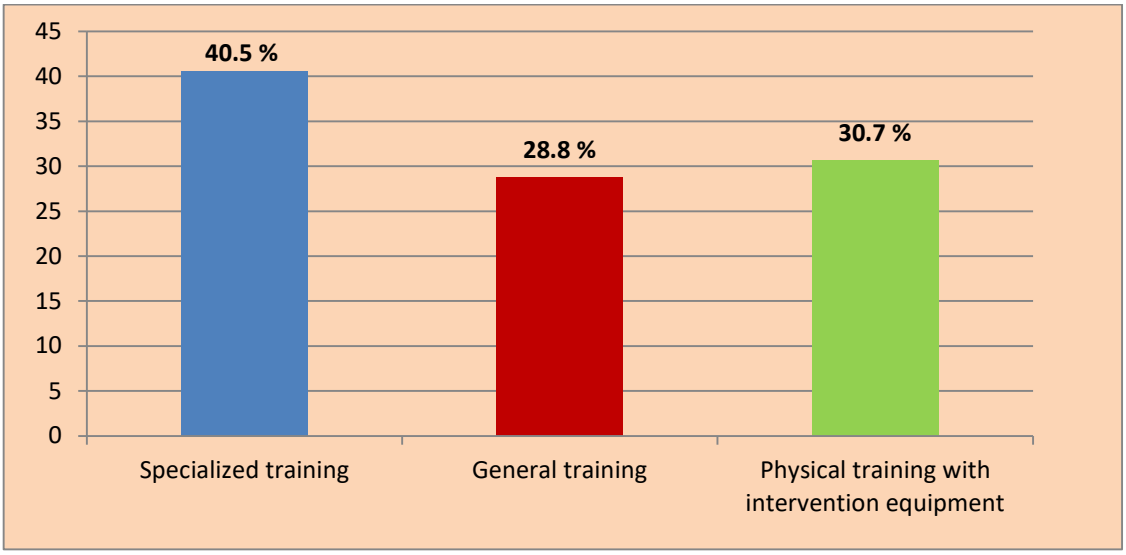

Fig. 1 The weight of the components of the experimental program

Selecting the sequences from the experimental program, it was found that 82 hours are from the means of athletics, gymnastics and sports games, 114 hours from the content of specialized training, 84 hours from physical training with the intervention equipment, adapted to the specifics of the weapon and 8 hours for evaluation.

The experimental program highlights the variety of the sessions through the multitude of possibilities for the execution of specific skills, an aspect that leads to the increase of attractiveness, to the avoidance of monotony by repeating the same movements.

In order to diversify the means of action and, at the same time, to achieve a high level of physical training of military firefighters, different ways of performing specific skills (exercises in speed regime, strength exercises, resistance exercises, etc.) in the form of routes, which are as close as possible to those included in the evaluation program. The presented routes were applied starting from the first quarter of the training year, when the non-commissioned officers moved from the individual route to the team/pair route, which allowed them to perform them in coordination and synchronization with a partner, situation often found in interventions.

At the same time, the acquisition and improvement of specific skills, as well as the different forms of their execution, also determine the development of motor skills. Thus, the proposed

experimental program has as its objective the development of motor capacities, at least at the level of the experimental group, as well as the improvement of specific motor skills (applicative paths) in order to develop the effort capacity (Figure 2).

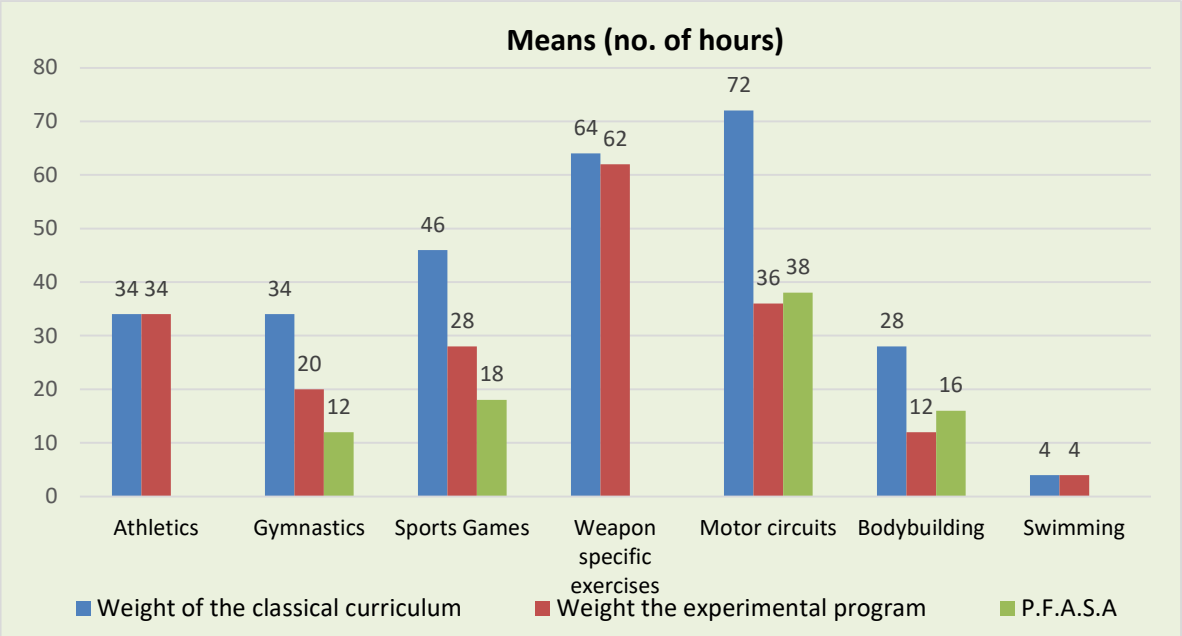

Fig. 2. Dynamics of the weight of the means of the experimental program

As can be seen in Figure 2, the experimental curriculum includes the transfer of a large number of hours from the general physical training component and only 2 hours from the specialized training. A new component appears in the experimental program, i.e. adapted means and consists of performing them in the intervention equipment. The hours allocated to this new component have been redistributed from those allocated to specific training.

The planning of the physical training of the personnel who fall into the category of "high" physical demand includes homework and exercises from various disciplines, adapted to the sports base and sports materials existing in each place of activity.

In the experimental curriculum, exercises were planned and carried out to develop and maintain speed, strength and endurance, even during the Covid-19 pandemic.

Chapter 3, "Experimental argumentation of the means of action in the physical training sessions of the military firefighters", considered the implementation of the diversified content through means adapted to the specifics of the weapon, of the experimental program in the physical training sessions at the inspectorate level. At the same time, the results obtained in the pedagogical experiment are scientifically argued, which includes an analysis of the dynamics of the evolution of indices of physical capabilities, of special motor training and of some physiological indicators of military firefighters within the professional services for emergency

situations. Ways of organizing and carrying out the programmed activities are presented, which were aimed at verifying the effectiveness of the experimental program. Thus, the application of the experimental program, followed by the analysis and comparison of the differences obtained between the results of the subjects in the experimental group and the control, proved that the diversification of the content of the physical training program carried out in the equipment specific to the interventions, by means adapted to the specifics of the weapon, contributes to the improvement continuous training of military firefighters within the professional services for emergency situations.

The results obtained by the two groups of subjects in the tests for the assessment of motor capacities are summarized in Table 2, together with the corresponding statistical indicators resulting from the processing. As can be seen, the progress made by the averages obtained is also confirmed by the Student's test (T-test). That is why we specify that the hypothesis tested was not that of the equality of the means, but of the differences between them [17; 18].

Table 2. Dynamics of physical training indices of military firefighters for general physical training tests during one year of training (n=40)

Nr. crt.	Test	Group of subjects	Statistical indicators			
			Initial testing X ± m	Final testing X ± m	t	P
1.	Running 50 meters (sec)	M	7,80±0,20	7,60±0,15	0,115	> 0,05
		E	7,67±0,11	7,10±0,09	2.190	< 0,05
		t	0,385	2,087	-	-
		P	> 0,05	< 0,05	-	-
2.	Push-ups (rep. no.)	M	55,60±0,24	57,52±22,80	2,26	< 0,05
		E	56,80±22,90	60,02±22,72	4,761	< 0,01
		t	0,381	2,252	-	-
		P	> 0,05	< 0,05	-	-
3.	Raising the trunk from lying on the back (rep. no.)	M	46,30±0,29	48,07±0,22	2,36	< 0,05
		E	46,60±0,24	50,82±0,20	4,861	< 0,001
		t	0,491	2,242	-	-
		P	> 0,05	< 0,01	-	-
4.	Specialized test (running 50 m with hose reels) (s)	M	13,80±0,60	13,65±0,27	0,105	> 0,05
		E	13,70±0,28	12,15±0,25	2.905	< 0,001
		t	0,155	2,197	-	-
		P	> 0,05	< 0,05	-	-
5.	Running 1000 meters (sec.)	M	240,50±11,71	236,70±9,26	1,407	> 0,05
		E	235,10±10,25	228,44±8,23	3,430	< 0,001
		t	0,180	2,058	-	-
		P	< 0,05	> 0,05	-	-

Note: n=40 military firefighters from sub-units aged up to 35 years.

Legend: E – experimental group, M – control group, t – student t-figure, p – coefficient of statistical significance, X – arithmetic mean, m – mean error.

The final tests indicate changes in the values, especially in the experimental group, demonstrating the effectiveness of diversification and the use of adapted, specific means in the process of physical training.

The analysis of the motor indicators, recorded after testing the military firefighters from the 2 groups included in the experiment with the age of up to 35 years, operational personnel from the Botoșani fire brigade (experimental group - GE) and Dorohoi (control group - GM), we -they allowed us to make some findings regarding the effectiveness of the experimental training program applied during a calendar year by calculating the significance of the average of the results obtained, the value distribution or the homogeneity of the subjects.

Speed test [2; 9] by "50 meter run" is one of the assessments where the progress made by both groups is low because speed is a motor quality that is difficult to develop, but nevertheless the threshold is significant according to the statistical calculation, even if it was recorded a small difference. Thus, in the control group, where a difference of approximately 0.20s was recorded, the difference recorded is insignificant ($P > 0.05$), between the initial and final testing (Table 2). In the experimental group, the difference between the two moments of the test (initial and final) is 0.57 sec, which means that it is significant, registering a threshold of $P < 0.05$. At the same time, the differences recorded between the two groups, related to the evaluation moments, capture an insignificant value at the initial testing of 0.13 sec ($P > 0.05$) and a significant value of 0.50 sec ($P < 0.05$) at the final testing.

The difference between the two groups in the final test may also be caused by the reaction capacity at the start, speed being a quality in which one of the determining factors is attention and concentration.

For the "Floating" test, the results obtained in the two groups of military firefighters registered an approximately constant increase in both groups, both at the initial and final testing. However, the significance threshold makes the difference between the values obtained by the two groups at the final test. Thus, in the experimental group there is a distinctly significant difference of 3.22 rep. ($P< 0.01$), and in the control group an insignificant difference of 1.92 rep. ($P < 0.05$). At the same time, the difference between the experimental group and the control group was insignificant, $P > 0.05$ at the initial test and significant at the final test ($P< 0.05$). This test that evaluates the strength of the arm muscles, chest muscles and back muscles is of particular importance in the evaluation of military firefighters because it represents the carrying capacity, either of the specific equipment or of the victims. At the same time, push-ups are performed in all forms of physical training in the mandatory program of military firefighters, both in the warm-up

part and in the part of developing motor capacities. This exercise is both a permanent means used in the training process and an entrance test in many military institutions. This is a good reason why the recorded differences are not that big. Also, even if the adapted training program contains analytical processing exercises, they are not designed for the development of motor capacities, namely strength, but for increasing the specific effort potential, useful to the military firefighter during interventions.

In the test that evaluated the strength of the abdominal muscles "Lifting the trunk", the experimental group recorded high significance ($P< 0.001$), while the control group was at an average level of significance ($P < 0.05$) although there is an increase of the average. Moreover, this difference is directly visible through the analysis of the averages, where the experimental group recorded an average of approximately 48 repetitions while the control group only 46 repetitions. We find approximately a similar difference between the control group and the experimental group at the final test ($P < 0.05$). We believe that the differences recorded by the two groups of subjects are the result of the exercises for the muscle strain included indirectly in the adapted, experimental program. It should also be remembered that many military firefighters also perform these exercises outside of mandatory physical training sessions as an additional measure in their free time to ensure abdominal tone. Another reason why we believe that a significant difference was recorded is the fact that the adapted program also determined a decrease in the body mass index through the effort made, as a result of the increase in body temperature due to performing the exercises equipped for the intervention. Wearing the intervention suit causes both a high effort caused by its weight (approximately 20 kg.) and by increasing body temperature.

The analysis of the statistical calculations of the indices (X; m) shows in the experimental group, at T.I., a value of 46.60±0.24 repetitions, with an increase of 4.22 repetitions at T.F. significant difference in means between tests ($P < 0.001$). In the control group, the index value (X±m) at T.I. is 46.30±0.29 repetitions, with an increase of 1.77 repetitions at T.F. and significant differences at $P<0.05$. Analyzing the difference between the averages of the 2 groups, we notice that at G.E. higher values were recorded, at T.I., with 0.30 repetitions ($P>0.05$) and with 2.75 repetitions at T.F. ($P<0.001$).

The results of the evaluation of the skill coordination capacity [3] assessed through the "Specialty Test" (running 50 m with hose reels) which consisted of running for a distance of 5 m, taking 2 type C hoses from the ground, deploying them, connecting the connections, connecting one connection to the distributor (located 25 m away from the starting line) and the other to the waist pipe, running until crossing the finish line drawn at 50 m, with the pipe connected in hand.

In addition to the ability to perform the movements in the shortest possible time, this test represents a test of professional potential. In this trial, the military firefighters do their best to achieve the shortest possible time because they are aware of the importance of every second that passes from the moment they arrive at the scene of the intervention and start the fire extinguishing operation. Military firefighters are aware that these seconds can lead to saving lives and many times, even ensuring personal safety of the intervention. The difference of 1.55 seconds places the experimental group at a very significant difference from the control group. The difference between the results obtained by the two groups places them in the "good" category according to the qualifications of the specific scales according to the Order of the Minister of Administration and Interior no. 154 of 03.03.2004 regarding the activity of physical training and sports in M.A.I. At the same time, this test is found in all branch competitions (competitions of military firefighters) and employees are interested in obtaining very good results because it represents the main moment of selection in the formation of sports teams. The big difference between the two groups was expected from us, because it takes place in the intervention equipment, or the adapted program is precisely based on its use in all the designed exercises.

In the resistance evaluation test [4] by "Running for 1000 m", the difference from the initial test to the final test according to the statistical calculation (Table 2), in the experimental group is very significant ($P < 0.001$). But at the same time the difference between the results obtained at the final test between the experimental group and the control group are significant ($p < 0.05$). In other words, part of the recorded value is found in the fact that military firefighters in the control group did not achieve a significant difference ($p > 0.05$) from the initial to the final stage. We must not forget the fact that at the initial testing the difference in time recorded between the two groups was insignificant ($p > 0.05$). This result is explained by the fact that the military firefighters had a fairly good physical training and resistance. In this sense, we can say that their homogeneity, in both groups, is good. The differences obtained in the resistance evaluation test can be attributed to the conditions for performing the adapted means that had as their objective, implicitly, the development of this motor quality. At the same time, the adapted means were also executed in the form of circuits, when the aim was to develop general resistance, create diversity, improve professional skills. Of course, military firefighters in the control group had the same objective: developing endurance, but we must not forget that endurance running also has a specific behavioral component, namely the appearance of monotony. In this sense, we can state that the subjects of the experimental group benefited from much more attractive and dynamic means, and the increase in resistance was achieved without any mental effort in this regard.

For the indicators that characterize the "endurance" capacity of the military firefighters on duty involved in the experiment, the 1000m run is characterized by a decrease in their time during a year of training, the average time in the control group is much lower compared to by the experimental group. In military firefighters, the average value of the "resistance" indicator at the end of the year in the control group is 236.70±9.26 sec, with a decrease of 3.8 sec, being insignificant. In the experimental group, the average of 228.44±8.23 sec was obtained, which represents a decrease of 6.66 sec. being significant. This decrease in the experimental group falls within the significance threshold of $P< 0.05$ between the value obtained at the end of the year in the control and experimental groups. The different values between the 2 means are transposed to the significant threshold of $P < 0.01$.

In the second category of evaluations (evaluation of specific motor capacity), within circuit no. 1 [7], in the experimental group, at T.F., obtaining the qualification "Very Good" shows an increase of 23%, showing the improvement of the execution of the route and the fluency of the segments established in the order of development at the established times, and the qualification "Good" shows a value of 59 .5%, showing that a constant was kept in the execution of the tests on the route, having also mistakes in the execution of the exercises.

Table 3. The results of the evolution of the motor capacity level in the specific samples

No. Crt.	Means / Evaluation indicators	Initial testing Notes	Final testing Notes	t	P
1	**Circuit no. 1** individual in the strength room - (min/sec)	7,90±0,24	8,80±0,25	2,87	< 0,01
2	**Circuit no. 2** individual outside - (min/sec)	8,10±0,22	8,93±0,21	2,93	< 0,01
3	**Circuit no. 3** in binomial (team)/away - (min/sec)	8,40±0,28	9,34±0,26	3,21	< 0,01
4	**Circuit no. 4** individual outside - (min/sec)	8,30±0,23	9,10±0,22	3,10	< 0,01

Note: n=40 military firefighters from sub-units aged up to 35 years.

Within the circuit of the experimental group, at T.F., obtaining the qualification "Very Good" shows an increase of 23%, showing the improvement of the execution of the route and the cursiveness of the segments established in the order of development at the established times, and the qualification "Good" shows a value of 59, 5%, showing that a constant was kept in the execution of the tests on the route, having also mistakes in the execution of the exercises.

In the case of the control group, at T.F., obtaining the FB qualification shows an increase of 10.2%, improving the way of execution and the linearity of the order of tests in the circuit and the established times, and the "B" qualification shows the value of 81.2%, showing that the

established stringing of the tests in the circuit was preserved, having mistakes in the execution of the exercises.

Looking at the differences in the weight of qualifications between groups at T.F., a higher execution level of the FB qualification is observed by 22% and the B qualification lower by 12%, in both groups. After completing the application route, which has a high degree of difficulty, we affirm that the operative personnel significantly improved their motor ability.Această creștere a calificativului de încadrare a grupei martor este determinată de efectuarea circuitelor cu mijloace adaptate care au un nivel ridicat de similitudine cu cele care formează probele de evaluare. În același timp este îmbucurătoare și creșterea procentului de încadrare la grupa martor deoarece demonstrează dorința pompierilor militari de a obține rezultate cât mai bune la evaluările obligatorii.

Within circuit no. 2 [12], in the experimental group at T.F., the grade "FB" shows an increase of 13%, shows an improvement in execution and fluency in terms of the order and times set, the grade "B" with a percentage of 56%, keeping -the order of performing the exercises with small execution errors. In the control group, the FB qualification has an increase of 9%, improving the execution and fluency of the order and times of the established exercises; grade B has a value of 73%, maintaining the established order of the exercises, with small execution errors. Regarding the differences in the weight of the grades between the groups at T.F., the grade "FB" has an increase of 17%, which indicates an improvement in the requirements for performing the route, and the grade "B" decreases by 17% in the experimental group.

The results obtained by the tested military firefighters show us that an increasing number of employees obtained the qualification "very good" in the final evaluation compared to the initial evaluation, which is due to the intensification of the physical training process. One of the reasons why there was an increase in the recruitment percentage of the control group is the fact that the means of action were much more carefully planned for the two periods of the year, namely the spring/summer season. This distribution, apparently unimportant, facilitated the carrying out of activities in optimal conditions and made the most of the advantages created.

In the case of circuit no. 3 [5], in the experimental group, at T.F., the qualification "FB" shows an increase of 22%, improving the performance descriptors, and the qualification "B" has a weight of 16%, showing the improvement of technical execution requirements and promotion to the qualification " FB" given the fact that many firefighters corrected their mistakes during the circuit. In the case of the control group in T.F., the qualification "FB" shows an increase of 7%, and the qualification "B" has the weight of 48% of the total percentage. Analyzing the difference

in the weight of the qualifications between the groups, we notice that at T.F obtaining the qualification "FB" by the experimental group, shows a high level of performing the circuit by 42%, and the qualification "B" being 32% higher by the control group. According to the results obtained following the completion of the motor circuit and the evaluation of the level of motor capacity in the binomial, we found an increase in physical performance and an improvement in the response time during interventions in emergency situations to which the inspectorate's staff are subjected. The increase in the proportion of military firefighters from the experimental group to the very good category with a percentage of 84% can be considered spectacular, something rarely seen in the history of evaluations.

In the case of circuit no. 4 [6], in the experimental group, within the T.F., the qualification "FB" shows an increase of 30%, showing the improvement of the execution, with minor mistakes, the technical execution being correctly respected, the performance descriptors improving; the Good (B) grade has a value of 25%, so all military firefighters have corrected their circuit mistakes.

In the control group, in T.F., the grade "FB" shows an increase of 15%, improving the performance descriptors, the grade "B" has a decrease of 15%, improving the execution of the circuit and being promoted to the grade FB. Considering the differences in the weight of the qualifications between the groups, we notice that at T.F the "FB" qualification has a 40% higher value than at GE, a higher level of performing the circuit, the B qualification is 30% lower, thus improving the execution requirements.

The results obtained by the staff evaluated show that a larger group of employees obtained the qualification "FB" in the second test. This qualification is the result of obtaining superior circuit times relative to heart rate. Therefore, obtaining the qualification "very good" requires a periodic repetition of the circuit but also a continuous general physical training. Also, the results obtained represent the performance of some moments of these circuits both in the designed games and in the realized routes superimposed with the psychological effect of working in pairs.

The results of the tests between the groups, both at T.I and at T.F, highlight a higher level of execution of the elements that make up each circuit in the experimental group. These improvements of the performance descriptors, regarding the execution of the dynamic elements within the 4 circuits, are due to the diversification of the content of the weapon-specific means of adaptation as close as possible to the situations they encounter in emergency situations, as well as the influence of the level of motor capacity development on their deployments.

Table 4 shows the values recorded after the 2 tests T.I. - initial test and T.F. - final test in the 2 control and experiment groups regarding the effort capacity compared to the values of the Ruffier test, the body mass index, the maximum oxygen consumption (VO2 max) and spirometry.

Following the analysis of the Ruffier index according to the measurements carried out, according to table 3.3 in the 2 groups, the control group and the experimental group in the 2 tests regarding the effort capacity relative to the values of the "Ruffier" test: very good < 1; between 1.1 - 5 good; between 5.1 - 10 mediocre; between 10.1 - 15 weak; above 15.1 very weak, we can say that they have improved. As can be seen from the measurements carried out, the Ruffier index in the control group is between satisfactory and average, having an index value of 7.2 at the initial test, which indicates that military firefighters are at an average level. The results of the Ruffier index values in the control group, even if these index values decrease during the final tests T.F. from the value of 7.2 to 4.6 these are not enough to satisfy the needs of a proper physical training.

Table 4. Dynamics of physiological indicators in the 2 tests

No. crt.	Capacity test of effort	Male groups	Registered values		Value groups	
			T.I.	T.F.	T.I.	T.F.
1.	**Index Rufierr**	GM	7,2 – M	4,6 – M	Environment	Good
		GE	7,1– M	0,9- FB	Environment	Very good
2.	**BMI (kg/m2)**	GM	25,20	24,98	Overweight	Normal
		GE	25,23	22,96	Overweight	Normal
3.	**VO2 max (ml/kg/min)**	GM	38,8	44,6	Environment	Good
		GE	39,6	51,9	Environment	Excellent
4.	**Spirometry**	GM	76%	77%	Good	Good
		GE	76%	80%	Good	Very good

Note: n=40 according to age, sex, height, G.M.- control group, G.E.- experiment group, T.I - initial test, T.F.- final test.

The results of the measurements performed on the experimental group during the initial testing show us a Ruffier index value of 7.1, which indicates that military firefighters are at an average level, and following the application of the experimental program, the level of the index decreased in the final testing to the value of 0.9 reaching the qualification of very good. The difference in the index being considerable due to the fact that they realized that only in this way they will be able to complete the missions to which they are subjected. The differences between the 2 groups in the 2 tests are significant, indicating that military firefighters achieved a very good level in the 4 quarterly evaluations. Also, the very large difference recorded is a natural consequence of the use of the special equipment, namely the oxygen mask, in the execution of the adapted means. Using an oxygen mask makes breathing difficult and puts the body under a lot of strain.

The analysis of the body mass index performed in the 2 groups taken into account as a finality at the end of the training period clearly demonstrated the value of the experimental program. The influence of the content of the experimental program on the physical development of the military firefighters in the experimental group and the control group highlights the differences in the environments and their meanings, compared to the data of the ascertainment assessment. It is known that weight and height are essential indicators to highlight growth and physical development. The value of the indices at G.E, at T.I. being 85.72±0.82 kg, with a decrease of 6.51 kg at T.F. and significant differences in means between tests at $P<0.01$. In the control group, the weight index value at T.I. is 86.17±0.81 kg, with a decrease of 3.03 kg at T.F., the value being 83.14±0.89 kg and insignificant differences in means between tests at $P>0.05$. The results of the average differences between the groups show lower values in the experimental group, with 1.03 kg at T.I. ($P>0.05$) and by 0.93 kg at T.F. ($P>0.05$).

The differences recorded at the two moments of evaluation, respectively categories of subjects highlight the general trend of today's society, respectively the trend of increasing weight that is registered at the global level. One of the reasons why both groups of subjects initially fall into the "overweight" category is the difficult period that humanity has gone through due to the quarantine imposed by the presence of the Covid 19 virus. At the same time, the subjects were reported to a generally valid BMI, and we believe that military firefighters should be classified as "athletes" because they have the obligation to participate in constant physical training. However, the subjects fall into the lower limit of the "overweight" class, which determined that in the final evaluation, according to the results obtained, they were found in the normal weight category. In the experimental group, the BMI value at the final test is a consequence of the additional effort due to the application of the experimental program which, through the use of adapted means, causes an increase in water loss and implicitly a constant decrease in weight.

Analyzing the maximum oxygen consumption (VO2 max) in the two moments of the evaluation, an improvement in its values is found in both groups, this being a natural consequence of the effort made all year. As we can see according to the values in table 3.3, the VO2 max level is within normal parameters in the control group with values between 38.8-44.6 ml/kg/min starting from the initial testing, but with the increase in intensity it will increase to an index of very good at the final test which indicates to us that military firefighters are in the optimal standards.

During the experiment, an increase in motor potential was observed, as well as an improvement in some physiological parameters (heart rate, reduction of air consumption from the cylinders of compressed air breathing apparatus from 120 atm. to 80 atm. thus, the experimental

group recorded during the initial testing, the value of 39.6 ml/kg/min of VO 2 max increasing the index at the final testing to 51.9 ml/kg/min, having a very high coefficient passing to the value of excellent.

The positive dynamics of oxygen consumption is a natural consequence of the body's ability to adapt to increasing efforts, but also to the use of means that directly influence breathing. Thus, the use of the oxygen mask involves limiting the amount of oxygen entering the lung in a single inspiration. However, the muscle needs an increasing amount of oxygen with the increase in physical stress. These things determined a natural evolution of the increase in the body's ability to rationally use the inspired oxygen. Of course, the use of the oxygen mask is not a moment expected by the firefighters during the preparation, but the variety of the means used, their attractiveness, determined the decrease of the negative psychological impact of this moment.

Regarding the normal values of spirometry, they vary according to age, sex, height, but on average, the normal value (FEV1) is between 75-80%. CV (vital capacity) – the total volume of air exhaled after a deep inspiration, the normal values of these functional samples are estimated in relation to the values of some international tables and are between 78-80% of the ideal values. The measurements and values obtained showed that military firefighters do not suffer from diseases such as asthma to which they are exposed by inhaling toxic gases during the intervention. The difference recorded by the experimental group was expected with the increase in VO2 max capacity and is based on the effort of the chest muscles to inhale as much oxygen as possible through the mask filter.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Following the research carried out and obtained, we can formulate the following conclusions:

1. From the result of the analysis of the information from the specialized literature regarding the theoretically mentioned aspects, we can conclude that:

- low number of Romanian bibliographic sources and, above all, a small number of manuals that address the specialized physical training component of military firefighters within the professional services for emergency situations, as well as the fact that no scientifically based research has been undertaken regarding to the improvement of the physical training process and ways to optimize it by diversifying the training content with means adapted to the specifics of the weapon.

- the physical training sessions of firefighters are conducted stereotypically according to regulations that are no longer up-to-date, the topics referring in particular to general motor capacity

(motor qualities, skills and basic motor skills), while specific and implicit motor capacity , specific physical training are neglected.

2. By applying the sociological questionnaire regarding the improvement of the training process addressed to specialists in the field, the following aspects were highlighted:

- the military cadres participate with pleasure in the physical training program and do not express themselves against its status as a mandatory discipline, although this is a service obligation, they also expressed their options regarding the practice of certain sports disciplines and their venue;

- most of the cadres practice a physical training program only during mandatory physical training sessions, body shaping exercises (bodybuilding/fitness in the gym) are proving to be extremely popular among military personnel, and following the systematic practice of the exercises military firefighters experience the beneficial effects of physical training sessions by improving their motor skills through a sporty and healthy lifestyle. In this regard, 2 projects with European funding were implemented and accessed for the completion, construction and arrangement of training points and physical training ranges specific to professional services for emergency situations [35].

3. The results recorded in the ascertainment research show us that the level of the motor capabilities of the military firefighters corresponds to the qualification "good", a fact that imposes in the physical training training process some diversification of the contents of the means from the annual plan adapted to the specifics of the weapon, and the implementation was proposed the experimental program for physical training for one calendar year.

4. The weight of the elements of the experimental program after grading within one year of training, represents 28.8% general physical training (PFG), 40.5% specialized physical training (PFS) and 30.7% physical training with the use of specific equipment weapons interventions (PFAS). Selecting the means from the experimental program, it was found that 82 hours are from the means of athletics, gymnastics and sports games, 114 hours from the content of specialized training, 84 hours from physical training adapted to the specifics of the weapon and 8 hours evaluation.

5. The results of the assessment of basic motor capacities in both groups show that progress has been made. Thus, the results of the evolution of the indicators of the development of the basic motor capacity of military firefighters during a year of training, highlight greater differences in the averages between the tests, in the experimental group there was a greater progress, different from one sample to another for all the indicators studied, namely: for push-ups of 3.22 repetitions ($P <$

0.01); for abdominal flexions values of 4.22 repetitions ($P < 0.001$); when running 50 meters with 0.57 sec $P < 0.05$); in running 1000 meters with 6.66 sec ($P < 0.001$), and in the specialized test (running 50 m with hose reels) with 1.55 sec ($P < 0.001$).

6. The results of the evaluation of the level of the specific motor capacity of the military firefighters in the experimental and control group, during one year of training, show greater differences between tests in the experimental group, the grade "FB" shows a 30% increase, the grade "B" shows a decrease of 22%. And in the control group, the qualification "FB" shows an increase of 15%, and the qualification "B" a decrease of 20%, and in the case of sports and dynamic games, significant values of the qualifications were recorded due to teamwork/binomial work, harmonizing and coordinating movements, which led to increased results by decreasing execution time. The positive result was also obtained in the situation of the dynamics of the specific motor training indicators in all cases of the military firefighters in the experimental group, with a level of significance between $P < 0.01$ and $P < 0.001$. The exercises adapted to the specifics of the weapon through sports/dynamic games practiced by operational military firefighters within the experimental program at the subunit level are performed with the equipment specific to the interventions, respectively with the means of individual protection.

7. The results of the assessment of the physiological indicators highlighted the level of the Ruffier index, which shows greater differences between the tests in the experimental group with a value between 7.1-0.9, which indicates that military firefighters reached a level between "good" and "very good". In the case of the maximum oxygen consumption VO2 max during the circuits an increase was achieved as follows, in the experimental group values between 38.8-44.6 ml/kg/min of VO 2 max were recorded during the initial tests increasing during the testing final index from 39.6-51.9 ml/kg/min having a very high coefficient moving to the value of excellent. Spirometry had normal values, being between 75-80% by measuring this indicator with the help of a portable spirometer, which proves that they do not suffer from health problems such as asthma.

8. The results obtained at the profile competitions by ranking repeatedly and constantly are another argument of the experimental program, a fact that helped to improve the level of development of basic and specific motor capacity, contributing to the increase of the prestige of the inspectorate at the national and international level by achieving the exchange of experience and the improvement of relations between military firefighters in order to align with the international standards of these contests, argued by the weight of the means of training and the assessment tools applied in the research carried out.

***

Following the results obtained by applying the means adapted to the specifics of the weapon and the experimental program on military firefighters from the intervention subunits, the following **recommendations** were developed:

1. Sports instructors/responsible for leading and implementing physical training must:

- to take into account the specific characteristics of the age and level of training of military firefighters in the military training process;

- to start and take measures for a material endowment and a well-equipped sports base, by attracting funds or implementing projects with European funding;

- carrying out general and specialized physical training activities should be carried out with attention, conscientiousness, rigor, concern and through active involvement.

2. In the annual thematic plan, 3 elements should be established for all thematic components of the physical training model:

- the number of activities addressed;

- distribution of these activities depending on the season during a year of training;

- the time (duration) belonging to the respective component in the context of the full duration of the activity.

3. For the smooth running of the physical training sessions, the participating staff should be permanently trained on the specific occupational health and safety measures that they must follow during the sessions, as well as on the provision of first aid in case of injury so that at the level to the fire brigade subunits that no work accidents occur, which would endanger the operational situation in the event of emergency situations.

4. Since after completing the route made up of means from sports and dynamic games, of the designed routes, an increase in physical performance and a decrease in the response time to emergency situations in which military firefighters intervene according to the attributions in the job description were observed, we recommend the following :

- the trails should be done on a rested basis, with repetitions, adapted to the particularities of age and experience;
- the routes are executed at a slow pace at the beginning aiming to reach an accelerated pace;

Therefore, specialized physical training is and remains one of the most important components of continuous training of military personnel, without which the training of future "rescuers" employed by the Ministry of Administration and Interior, respectively military firefighters, cannot be conceived.

BIBLIOGRAPHY

1. ALEXE, N. *Teoria și metodica antrenamentului sportiv modern*, Editura Fundației România de Mâine, București, 2002, p. 71, ISBN: 973-582-491-4;
2. BADIU, T. *Teoria educației fizice și sportului*, Editura Mongabit, Galați, 2002, 139 p., ISBN 973-8139-63-5;
3. CÂRSTEA, G. *Educația fizică - fundamente teoretice și metodice*. București: Casa de editură Petru Maior, 1999, p. 6-93. ISBN 973-98450-8-8;
4. CÂRSTEA, G. *Metodica educației fizice*, ANEFS-Bucureşti, 1995;
5. CHIRAZI M., **LOLUȚĂ A. G**. "Dezvoltarea nivelului capacităţii motrice a pompierilor militari prin circuite" (CZU 795.012:355.2) Revista teoretico-stiintifica "Știința Culturii Fizice" - 2019 Nr.33/1 (ISSN: 1857-4114 eISSN: 2537-6438) Universitatea de Stat de Educație Fizică și Sport Publicaţie ştiinţifică recenzată Categoria „B", https://scf.usefs.md/PDF/Revista%20SCF/1-2019/1--2019_1_ro.pdf
6. CHIRAZI M., **LOLUȚĂ A. G.** The growth of the motor capacity of military pumps through the utility-application route, the 4th International Conference of the Universitaria Consortium, "The impact of sport and physical education science on today's society" Iași, November 23-24, 2018, Romania. SPORT AND SOCIETY - Interdisciplinary Journal of Physical Education and Sports (p-ISSN 1582-2168, e-ISSN 2344-3693) is a biannual scientific journal published by the Altius Academy Foundation - Faculty of Physical Education and Sports,"Alexandru Ioan Cuza" University of Iasi, Romania. https://www.sportsisocietate.ro/articol/440
7. CHIRAZI M., **LOLUȚĂ A. G.,** Maintenance of motor capacity during the cold season of military pumps in additional means / p. 173, in the 19th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 16-18, 2019, Romania, Journal *Ovidius University Annals, Series Physical Education and Sport/Science, movement and health*, ISSUE 2 SUPPLEMENT - Volume XIX, SCIENCE, MOVEMENT AND HEALTH 2019, Revista Analele Universității „Ovidius", Seria Educație Fizica și Sport, ISSN-L 2285-777X, ISSN online 2285-7788, http://analefefs.ro/anale-fefs/2019/i2suplement/pe-autori/CHIRAZI_MARIN___LOLU%C5%A2%C4%82_ADRIAN-GABRIEL.PDF
8. CHIRAZI, M. *Curs – Metode de cercetare în educaţie fizică şi sport,* Editura Universităţii "Alexandru Ioan Cuza", Iaşi, 2002;
9. DRAGNEA, A. și colaboratori, *Educație fizică și sport-teorie și didactică,* Editura FEST București, Ediția 2006.
10. ENE-VOICULESCU, V. *Tehnica şi metodica predării în probele aplicativ-militare de vară și de iarnă*, Editura Academiei Navale „Mircea cel Bătrân", Constanța, 2007, 160 p., ISBN:978-973-1870-02-1;
11. GALAN, D. și colaboratori, *Manual de educație fizică pentru pompieri*, Editura RISOPRINT, Cluj-Napoca, 2010, 384 p., ISBN: 978-973-53-0325-9;
12. **LOLUȚĂ A. G.** *"Intensificarea procesului de pregătire fizică profesional-aplicativă a pompierilor militari"* (CZU: 796.15:355/3592) Revista teoretico-științifică "Știința Culturii Fizice" 2021, Nr.37/1, pag. 43-58, Universitatea de Stat de Educaţie Fizică şi Sport Publicaţie ştiinţifică recenzată Categoria „B", https://scf.usefs.md/PDF/Revista%20SCF/1-2021/4.pdfd
13. **LOLUȚĂ, A. G.** Maintaining the Motor Capacity of Military Firefighters Through the Football Game. În: Gymnasium - Scientific Journal of Education, Sports, and Health , Vol. XXIII, Issue2/2022, Bacău, România. https://doi.org/10.29081/gsjesh.2022.23.2.05 https://gymnasium.ub.ro/index.php/journal/article/view/668/840

14. **LOLUȚĂ**, **A. G.** *Intensifying the motor capacity of military firefighters through basketball,* In: *ACROSS* . 2022, nr. 5(4), pp. 51-56. ISSN -/ISSNe 2602-1463;
15. **LOLUȚĂ, A. G**. *Perfecţionarea capacităţilor motrice ale pompierilor militari într-un timp relativ scurt.* În: *Sport. Olimpism. Sănătate*. Ediția 4, 19-21 septembrie 2019, Chișinău. Chișinău, Republica Moldova: Editura USEFS, 2019, pp. 70-71. ISBN 978-9975-131-76-6. https://ibn.idsi.md/vizualizare_articol/146474
16. TORJE, D.C. *Teoria şi metodica pregătirii în domeniul educaţiei fizice a personalului M.A.I, autor,* Editura Ministerului Afacerilor Interne, Bucureşti, 2005;
17. TUDOR, V. *Măsurare și evaluare în cultură fizică și sport*, Editura Moroșan, București, 2008, 200 p., ISBN: 978-973-8986-48-0;
18. TUDOŞ, Ş. *Elemente de statistică aplicată*, Editura ANEFS, București, 1993, pp.23-91;
19. ABEL, M.G., MORTARA, A.J., PETTITT, R.W. Evaluation of circuit-training intensity for firefighters. *Journal of Strength and Conditioning Research* 25(10): 2895-901, 2011. doi: 10.1519/JSC.0b013e31820da00c.
20. BAUR, D.M., CHRISTOPHI, C.A., TSISMENAKIS, A.J., JAHNKE, S.A, KALES, S.N. Weight-perception in male career firefighters and its association with cardiovascular risk factors. *BMC Public Health* 12(480): 1-8, 2012.
21. BONNELL, E., HUGGINS, M., and BONHAM, M.P. Factors influencing rotating shift workers eating habits: A cross-sectional study of Melbourne Metropolitan fire fighters. *Journal of Nutritional and Intermediary Metabolism* 4(12): 24-38, 2016.
22. BOURDON S., RENAULT J. Lexique athlé, dictionnaire scientifique de l'athlétisme. AEFA. N° 200. 2010.
23. Legea educaţiei fizice şi sportului nr. 69/2000;
24. Ministerul de Interne, Comandamentul Pompierilor - Metodica instruţiei de specialitate a subunităţilor de pompieri - Partea a II-a, Bucureşti, 1989;
25. Ordinul Ministrului Administraţiei şi Internelor nr. 154 din 03.03.2004, privind activităţile de educaţie fizică şi sport în M.A.I.;
26. Ordinului Inspectorului General al Inspectoratului General pentru Situaţii de Urgenţă nr. 1535/IG din 28.12.2018, privind organizarea şi desfăşurarea educaţiei fizice și a sportului cu personalul militar din cadrul structurilor şi subunităţilor de intervenţie ale serviciilor de urgenţă profesioniste subordonate Inspectoratului General pentru Situaţii de Urgenţă;
27. Ordinului Inspectorului General al Inspectoratului General pentru Situaţii de Urgenţă nr.7/IG din 21.03.2019, privind organizarea şi desfăşurarea formării profesionale continue a personalului operativ din subunităţile de intervenţie ale serviciilor de urgenţă profesioniste – ISU 06/2019;
28. Regulamentul pregătirii fizice, MapN, București - ediţia 1984;
29. Regulamentul cu privire la organizarea pregătirii fizice și sportului în cadrul MAI, aprobat prin ordinul MAI nr. 69 din 16.03.2017;
30. Приказ МЧС России 153 от 30.03.2011-Об утверждении Наставления по физической подготовке личного состава федеральной противопожарной службы;
31. Asociația Sportivă a Pompierilor din România(A.S.P.R.) http://www.aspr.org.ro
32. Inspectoratul General pentru Situații de Urgență (I.G.S.U.) https://www.igsu.ro
33. Inspectoratul pentru Situaţii de Urgenţă "Nicolae Iorga" al Judeţului Botoşani (I.S.U.J) http:/www.isubotosani.ro
34. Revista Pompierii Români; https://www.igsu.ro/InformatiiUtile/RevistaPompierilor
35. Programe Europene 2014-2020, https://www.ro-ua.net/ro/
36. Școala de Subofițeri de Pompieri și Protecție Civilă "Pavel Zăgănescu" http://www.scoaladepompieri.ro

LIST OF PUBLICATIONS OF THE AUTHOR ON THE THEME OF THE THESIS

1. CHIRAZI, M., **LOLUŢĂ, A.G.,** Maintaining the motor capacity of military firefighters during the emergency in the context of the Covid-19 pandemic / P. 192 in the 20th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 29-30, 2020, Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH Vol. XX, ISSUE 2 Supplement, 2020, Romania The journal is indexed in: Ebsco, Sport discus, Index Copernicus journal master list, doaj directory of open acces journals, Caby, Gale Cengage Learning, Cabell's Directories,Seria Educatie Fizica si Sport, ISSN-L 2285-777X, ISSN online 2285-7788, https://analefefs.ro/anale-fefs/2020/i2-supliment/pe-autori/6.%20CHIRAZI%20MARIN%2C%20LOLUTA%20ADRIAN-GABRIEL.pdf
2. CHIRAZI, M., **LOLUŢĂ, A.G.**, Dezvoltarea nivelului capacităţii motrice a pompierilor militari prin circuite (CZU 795.012:355.2) Revista teoretico-stiintifica "Știința Culturii Fizice" - 2019 Nr.33/1 (ISSN: 1857-4114 eISSN: 2537-6438) Universitatea de Stat de Educaţie Fizică şi Sport Publicaţie ştiinţifică recenzată Categoria „B", https://scf.usefs.md/PDF/Revista%20SCF/1-2019/1--2019_1_ro.pdf
3. CHIRAZI, M., **LOLUŢĂ, A.G.**, Maintenance of motor capacity during the cold season of military pumps in additional means / p. 173, in the 19th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 16-18, 2019, Romania, **Journal** *Ovidius University Annals, Series Physical Education and Sport/Science, movement and health*, ISSUE 2 SUPPLEMENT - Volume XIX, SCIENCE, MOVEMENT AND HEALTH 2019, Revista Analele Universitatii "Ovidius", Seria Educatie Fizica si Sport, ISSN-L 2285-777X, ISSN online 2285-7788, http://analefefs.ro/anale-fefs/2019/i2suplement/pe-autori/CHIRAZI_MARIN___LOLU%C5%A2%C4%82_ADRIAN-GABRIEL.PDF
4. CHIRAZI, M., **LOLUŢĂ, A. G.,** Study on the Admission in the Military Educational Institutions of the M.I.A. of Candidates – Women / p. 107-112, Bulletin of the Transilvania University of Braşov Series IX: Sciences of Human Kinetics,Vol. 13(62) No. 2 – 2020, https://doi.org/10.31926/but.shk.2020.13.62.2.13
5. CHIRAZI, M., **LOLUŢĂ, A.G.**, The growth of the motor capacity of military pumps through the utility-application route, the 4th International Conference of the Universitaria Consortium, "The impact of sport and physical education science on today's society" Iași, November 23-24, 2018, Romania. SPORT AND SOCIETY - Interdisciplinary Journal of

Physical Education and Sports (p-ISSN 1582-2168, e-ISSN 2344-3693) is a biannual scientific journal published by the Altius Academy Foundation - Faculty of Physical Education and Sports,"Alexandru Ioan Cuza" University of Iasi, Romania. https://www.sportsisocietate.ro/articol/440

6. CHIRAZI, M., **LOLUȚĂ, A.G**., Dezvoltarea calităţilor motrice ale pompierilor militari prin exerciţii utilitar-aplicative. În: *Sport. Olimpism. Sănătate*. Ediția a 3-a, 13-15 septembrie 2018, Chişinău. Chișinău, Republica Moldova: Print-Caro, 2018, pp. 28-29. ISBN 978-9975-131-65-0. https://ibn.idsi.md/vizualizare_articol/158690
7. **LOLUȚĂ, A.G.**, Perfecţionarea capacităţilor motrice ale pompierilor militari într-un timp relativ scurt. În: *Sport. Olimpism. Sănătate*. Ediția 4, 19-21 septembrie 2019, Chişinău. Chișinău, Republica Moldova: Editura USEFS, 2019, pp. 70-71. ISBN 978-9975-131-76-6. https://ibn.idsi.md/ro/vizualizare_articol/146474
8. **LOLUŢĂ, A.G.**, Intensificarea procesului de pregătire fizică profesional-aplicativă a pompierilor militari (CZU: 796.15:355/3592) Revista teoretico-științifică "Știința Culturii Fizice" 2021, Nr.37/1, pag. 43-58, Universitatea de Stat de Educaţie Fizică şi Sport Publicaţie ştiinţifică recenzată Categoria „B”, https://scf.usefs.md, https://scf.usefs.md/en/PDF/Revista%20SCF/1-2021/4.pdf
9. **LOLUȚĂ**, **A.G.**, Intensifying the motor capacity of military firefighters through basketball, In: ACROSS . 2022, nr. 5(4), pp. 51-56. ISSN -/ISSNe 2602-1463 https://ibn.idsi.md/vizualizare_articol/165033
10. **LOLUȚĂ**, **A.G.**, Maintaining the Motor Capacity of Military Firefighters Through the Football Game În: Gymnasium - Scientific Journal of Education, Sports, and Health ISSUE2,VOL. XXIII/ 2022, Bacău, România. *DOI: 10.29081/gsjesh.2022.23.1.10* https://gymnasium.ub.ro/index.php/journal/article/view/668/840 https://doi.org/10.29081/gsjesh.2022.23.2.05

ADNOTARE

Loluță Adrian Gabriel, *Pregătirea fizică a pompierilor militari din cadrul serviciilor profesioniste pentru situații de urgență*, teza de doctor în științe ale educației, Chișinău, 2023

Structura tezei: Teza este alcătuită din: introducere, trei capitole, concluzii generale și recomandări, bibliografie din 210 surse, 14 anexe, 128 de pagini text de bază, 39 de figuri, 17 tabele. Rezultatele obținute sunt publicate în 10 lucrări științifice.

Cuvinte-cheie: pompieri militari, pregătire fizică adaptată, echipament specific intervențiilor, capacitate motrică.

Scopul cercetării: constă în optimizarea activității de pregătire fizică din cadrul programului obligatoriu de formare continuă a pompierilor militari, prin diversificarea și particularizarea conținutului de pregătire cu mijloace adaptate la specificul armei, efectuate cu echipament specific intervențiilor.

Obiectivele cercetării: studierea conceptelor legislative și metodologice privind optimizarea procesului de instruire în cadrul pregătirii fizice generale și specifice a pompierilor militari pe plan național și internațional; analiza opiniilor personalului militar privind desfășurarea, baza materială și conținutul procesului de pregătire fizică la nivelul inspectoratului conform chestionarului sociologic; analiza nivelului capacității motrice a pompierilor militari; elaborarea conținutului programei experimentale axată pe mijloace adaptate la specificul armei efectuate în echipamentul din timpul intervențiilor; argumentarea și valorificarea eficienței conținutului programei experimentale la specificul armei în vederea creșterii nivelului pregătii fizice a pompierilor militari din cadrul serviciilor profesioniste pentru situații de urgență.

Noutatea și originalitatea științifică constă în perfecționarea pregătiri fizice a pompierilor militari prin diversificarea conținutului programei de pregătire a personalului militar din cadrul inspectoratului pe timpul formării continue, adaptat cerințelor din timpul situațiilor de urgență, prin adaptarea unor mijloace din jocuri sportive, jocuri dinamice, organizate în trasee aplicative, efectuate în condițiile specifice intervențiilor.

Rezultatele obținute care contribuie la soluționarea unei probleme științifice importante constau în consolidarea, din punct de vedere teoretic și experimental a optimizării pregătiri fizice a pompierilor militari, prin imitarea condițiilor din timpul intervențiilor, transpuse prin diversificarea mijloacelor de pregătire implementate în programa elaborată în acest sens.

Semnificația teoretică vizează argumentarea teoretică a condițiilor speciale din timpul intervențiilor și includerea în cadrul programei de pregătire fizică obligatorie a cadrelor militare din unitățile și subunitățile de pompieri pe durata unui an de pregătire.

Valoarea aplicativă constă în posibilitatea utilizării rezultatelor studiului, a programei experimentale, pentru optimizarea pregătirii fizice a pompierilor militari din cadrul inspectoratelor județene. Programa ar putea fi întrebuințată în procesul de pregătire și formare profesională continuă a pompierilor militari din unitățile și subunitățile de pompieri, pe durata unui an de pregătire.

Implementarea rezultatelor științifice: rezultatele cercetărilor au fost aplicate în scopul optimizării pregătirii fizice a pompierilor militari, fiind implementate în procesul de instruire continuă a personalului militar, precum și în pregătirea competițională a loturilor sportive din cadrul Inspectoratului pentru Situații de Urgență „Nicolae Iorga” al județului Botoșani, România.

АННОТАЦИЯ

Лолуцэ Адриан Габриэль, *Физическая подготовка военных пожарных в рамках профессиональных служб по чрезвычайным ситуациям, докторская диссертация в области педагогических наук,* Кишинев, 2023

Структура диссертации: Диссертация состоит из: введения, трех глав, общих выводов и рекомендаций, библиографии из 210 источников, 14 приложений, 128 страниц основного текста, 39 рисунков, 17 таблиц. Полученные результаты опубликованы в 10 научных статьях.

Ключевые слова: военные пожарные, адаптированная физическая подготовка, двигательный потенциал, специальная экипировка.

Цель исследования: оптимизация физкультурной деятельности в рамках обязательной программы непрерывной подготовки военных пожарных путем разнообразия и индивидуализации содержания тренировок средствами, адаптированными к специфике оружия, отрабатываемых на специализированном оборудовании.

Задачи исследования: изучение законодательных и методических положений по оптимизации тренировочного процесса в рамках общей и специальной физической подготовки военных пожарных на национальном и международном уровне; анализ мнений военнослужащих по вопросам дислокации, материальной базы и содержания процесса физической подготовки на уровне инспектората по данным социологического опроса; анализ уровня двигательной способности военных пожарных; отработка содержания экспериментальной программы, ориентированной на средства, адаптированные к специфике оружия, осуществляется в технике при проведении интервенций; аргументация и использование эффективности содержания экспериментальной программы по специфике оружия в целях повышения уровня физической подготовки военных пожарных в составе профессиональных служб по чрезвычайным ситуациям;

оригинальность: исследование заключается в совершенствовании физической подготовки военных пожарных за счет разнообразия тематического содержания программы подготовки военнослужащих в составе инспекции в ходе непрерывной подготовки, адаптированной к все более сложным требованиям, за счет адаптации некоторых средств из спортивных и динамических игр. к условиям вмешательства.

Полученные результаты: способствующие решению важной научной задачи, заключаются в закреплении с теоретической и экспериментальной точек зрения оптимизации физической подготовки военных пожарных, путем диверсификации средств обучения, адаптированных к специфике оружия, которые были реализованы в учебной программе, разработанной в связи с этим.

Теоретический смысл: направлено на теоретическое обоснование включения в программу физической подготовки в учебно-тренировочный процесс и непрерывную подготовку военнослужащих из частей и подразделений пожарных, за один год обучения.

Прикладное значение: состоит в возможности использования результатов исследования, экспериментальной программы, с целью улучшения физической подготовки военных пожарных в составе уездных инспекций. Учебная программа может быть использована в процессе подготовки и непрерывной профессиональной подготовки военных пожарных пожарных частей и подразделений в течение одного года обучения.

Внедрение научных результатов: результаты исследований применены с целью оптимизации физической подготовки военных пожарных, внедряются в процесс подготовки военнослужащих, а также в соревновательную подготовку спортивных команд в составе Инспекции по чрезвычайным ситуациям «Николае Йорга» уезда Ботошани, Румыния.

ANNOTATION

Loluță Adrian Gabriel, ***Physical training of military firefighters within the professional services for emergency situations, doctoral thesis in educational sciences,*** **Chisinau, 2023**

Structure of the thesis: The thesis consists of: introduction, three chapters, general conclusions and recommendations, bibliography from 210 sources, 14 appendices, 128 pages of basic text, 39 figures, 17 tables. The obtained results are published in 10 scientific papers.

Key words: military firefighters, adapted physical training, motor capacity, specific equipment.

The purpose of the research: consists in optimizing the physical training activity within the mandatory continuous training program of military firefighters, by diversifying and customizing the training content with means adapted to the specifics of the weapon, practiced with intervention-specific equipment.

Research objectives: studying legislative and methodological concepts regarding the optimization of the training process within the general and specific physical training of military firefighters on a national and international level; analysis of the opinions of military personnel regarding the deployment, material basis and content of the physical training process at the inspectorate level according to the sociological questionnaire; analysis of the motor capacity level of military firefighters; elaboration of the content of the experimental program focused on means adapted to the specifics of the weapon carried out in the equipment during the interventions; arguing and exploiting the effectiveness of the content of the experimental program for the specifics of the weapon in order to increase the level of physical training of military firefighters within the professional services for emergency situations.

Scientific novelty and originality: the research consists in perfecting the physical training of military firefighters by diversifying the thematic content of the training program for military personnel within the inspectorate during continuous training, adapted to increasingly complex requirements, by adapting some means from sports and dynamic games to the conditions of intervention.

The results obtained that contribute to the solution of an important scientific problem: consist in the consolidation, from a theoretical and experimental point of view, of optimizing the physical training of military firefighters, by diversifying the means of training adapted to the specifics of the weapon, which were implemented in the curriculum developed in this regard .

The theoretical meaning: it aims at the theoretical argument regarding the inclusion in the physical training program in the training process and the continuous training of military personnel from the units and sub-units of firefighters, in one year of training.

The applicative value: consists in the possibility of using the results of the study, of the experimental program, with the aim of improving the physical training of the military firefighters within the county inspectorates. The curriculum could be used in the process of training and continuous professional training of military firefighters in firefighting units and sub-units, in one year of training.

Implementation of scientific results: the research results were applied in order to optimize the physical training of military firefighters, being implemented in the training process of military personnel, as well as in the competitive training of sports teams within the "Nicolae Iorga" Emergency Situations Inspectorate of Botoşani County, Romania.

LOLUȚĂ ADRIAN GABRIEL

PHYSICAL TRAINING OF MILITARY FIREFIGHTERS WITHIN THE FRAMEWORK OF THE PROFESSIONAL SERVICES FOR EMERGENCY SITUATIONS

Specialty: 533.04 – Physical education, sports, physical therapy and recreation

Doctor of Science in Education Dissertation Summary

Approved for printing: date	Paper format 60x84 1/16
Offset paper. Offset printing.	Print ex
Pattern sheets:	Order no.

State University of Physical Education and Sports

MD-2024, Republic of Moldova, Chisinau, 22 A. Doga str