

## THE INTERDEPENDENCE OF PROFESSIONAL AND PHYSICAL READINESS FOR FUTURE OFFICERS OF THE AIR FORCE

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**Annotation.** *Purpose.* Determination of interdependence of the initial level of formation and development of general and applied physical cadets' qualities with the level of their preparedness for the performance of official functions and typical tasks of professional activity. *Material, methods.* 173 graduate cadets and 58 experts took part in the research. We used the following methods: theoretical analysis, generalization of scientific sources, ascertaining experiment, mathematical statistic. *Results.* Conducting of the ascertaining experiment allowed us to identify: the level of applied physical cadets' qualities formation is significantly lower than evaluative level of their general physical qualities: power by 0,27 points, speed by 0,44 points and aerobic endurance by 0,19 points; the strong straight correlation dependence ( $r=0,327$ ) of the initial level of development of applied physical qualities of future officers of the Air Force with the level of their readiness to perform official functions and typical tasks of professional activity. *Conclusions.* The presence of significantly better formed applied physical characteristics of young officers with a high professional readiness level confirms the expediency to continue research in the chosen direction.

**Keywords:** cadet, officer, physical qualities, physical training.

### Introduction

The period of cadets' studying at military higher educational establishment (MHEE) is extremely important stage of system of military specialist's professional formation. In this period the process of future officers' adaptation to conditions of military service, new regiment of training, rest and physical load takes place [1, 2].

Results of numerous researches, which were carried out in establishments of military education (Yu. Borodin, 2006; A. Markushin, 2006; V. Payevskiy, 2010; O. Petrachkov, 2012; K. Prontenko 2008 et al), witness about heterogeneity of main physical qualities' development and significant specific weight of low results of military-applied physical qualities' formation by cadets [6, 7, 9, 10-15]. It reduces effectiveness of military-professional orientation of educational process at MHEE, complicates its intensification, requires greater efforts from cadets for mastering of exercises of discipline "Physical education, special physical training and sports", envisaged by typical academic programs [4, 7].

The above said acquires substantial scientific-applied significance and determines purposefulness of rational methods of educational process's construction at MHEE for achievement of maximal output level of young military officers' physical condition for further professional functioning (Order of Minister of defense of Ukraine No.185, dt. 19.03.2013 "On organization of development of branch standards of higher education at military higher educational establishments and military educational sub-divisions of higher educational establishments"– K. : PBB АГУ GH AF Ukraine, 2013. – pg.20) [4, 7].

Scientists (V. Payevskiy, 2010; O. Petrachkov, 2012, K. Prontenko, 2008; O. Shevchenko, 2010 et al.) paid sufficient attention to adaptation of military officers to conditions of professional activity by means of physical trainings. With it application of physical exercises just in adaptation period of cadets' studying at MHEE has been researched minimally. In our opinion it is connected with incomplete determination of adaptation periods and state of physical fitness of cadets' organisms for enduring of loads of professional functioning within the frames of PT (physical training) at MHEE.

Important and substantial factor of PP system's functioning in MHEE cadets' educational process is a combination of connections of general-scientific, theoretical, professional and practical training concerning that military specialty, for the sake of which it is realized [2, 4-8]. Here it is necessary to consider methods, means and forms of teaching, evaluation of PT system's functioning final results' correspondence to existing educational and qualification requirements according to certain specialties that will orient the process of cadets' training on fulfillment of functions and typical tasks of professional activity [Order of Minister of defense of Ukraine No.185, dt. 19.03.2013 "On organization of development of branch standards of higher education at military higher educational establishments and military educational sub-divisions of higher educational establishments"– K. : PBB АГУ GH AF Ukraine, 2013. – pg.20).

The fulfilled analysis of modern researches witnessed the absence of common opinion of scientists (O. Boyarchuk, 2009; A. Markushin, 2006; V. Payevskiy, 2010; O. Petrachkov, 2012; O. Piddubniy, 2003; K. Prontenko, 2008; O. Shevchenko, 2010 et al.) about organization and structure of cadets' PT. It showed that in most cases connection between researched indicators or properties of system can not be always clearly determined owing to its disordering but different internal or external factors. In such conditions connection is manifested when certain value of one indicator corresponds to not only one separately defined indicator but to the whole number of components of other indicator [1, 3, 6].

Considering the above said we came to conclusion that one of important reasons of insufficient definition of content and means of future officers adaptation to up-to-date requirements of military-applied aspects of theoretical knowledge, application of forms, methods and technologies of cadets' mastering of methodic and practical skills in in existing system of PT MHEE is absence of determined interconnection between components of physical and professional readiness of cadets for further professional functioning. This stimulated us for carrying out of the presented research.

The research has been fulfilled as per combined plans of scientific & scientific-technical functioning of Armed Forces of Ukraine by topics: "Development of theoretical-methodic principles of military officers' of Armed Forces AF) of Ukraine PT system's functioning", state registration number 0101U000823, "Organizational aspects of functioning of military officers' of AF of Ukraine PT system", state registration number 0101U001284, "Improvement of military-applied skills of cadets of military higher educational establishments in system of special physical training of military officers" state registration number 0101U001622.

#### **Purpose, tasks of the work, material and methods**

*The purpose of the research* is to determine interdependence of output level of formation and development of general and applied physical qualities of MHEE graduates of Air Forces of Ukraine AF for young military officers' executing their service functions and typical tasks of professional activity.

In the process of our research we used the following methods: theoretical analysis and generalization of scientific sources for determination of essence and character of connections between components of different systems of MHEE cadets' PT; stating experiment for determination of efficiency of PT system in interdependence with readiness of future officers for professional activity; methods of mathematical statistics for processing of obtained data and determination of quantitative dependences between researched indicators. Mathematical processing of obtained results included determination of the following: mean arithmetic of researched indicators ( $\bar{X}$ ); error of mean arithmetic (m); mean square deviation (S); coefficient of variation (V); confidence of differences by Student (t). Differences between mean values were considered confident with level of confidence of 95% and more.

#### **Results of the researches**

In May- June 2011, in order to determine efficiency of physical training system's functioning for ensuring of maximal physical fitness of MHEE graduates for future military-professional activity we carried out research in the form of independent stating experiment in actual educational process of three MHEE of AF of Ukraine – Academy of Naval Forces, named after P.S. Nakhimov, Academy of land forces, named after hetman Petro Sagaydachiy, Kharkiv university of Air Forces, named after Ivan Kozhedub (KUAF).

The third part of stating experiment, results of which we regard in this article, was carried out with undergraduates of KUAF (n-173), mean age of whom was 22 years. Conducting of experiment involved 58 competent experts from officers of different kinds of AF of Ukraine, educational department, scientific-pedagogic personnel of KUAF.

The level of professional readiness of KUAF graduates 2011 was determined by results of complex state examination by specialty and qualified in the following way: "excellent" – high level (58.4%), "good" – middle level (32.9%), "satisfactory" – low level (8.7%).

In the process of passing examination in discipline "Physical education, special FT and sports" for evaluation of physical fitness and level of formation of general and applied physical qualities we used pedagogic testing by control standards of Instructions on PT 2009 [Order of Minister of defense of Ukraine No.685, dt. 30.12.2009 "On approval of Instructions on physical training in Armed Forces of Ukraine"– K. : PBB АГУ ГШІAS Ukraine, 2009. – pg.231]:

- Evaluation of strength – chin ups (exercise No.1);
- Evaluation of speed – 100 meters run (exercise No.23);
- Evaluation of aerobic endurance – 3000 meters run (exercise No.28);
- Determination of applied qualities of cadets of different military specialties – complex exercise for dexterity (exercise No.8), 400 meters run (exercise No.24), shuttle run 4x100 meters (exercise No.24a), shuttle run with arms 6x100 meters (exercise No.25).

In connection with the fact that level of development and formation of graduates' physical qualities was determined with different exercises, comparison of differences' confidence was fulfilled by evaluation results (see fig.1).

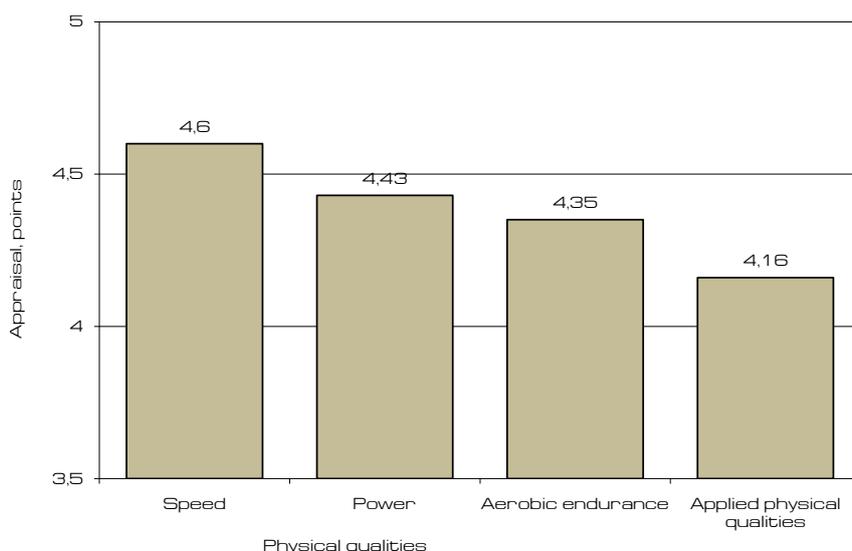


Fig.1. Level of general and applied physical qualities of KUAF graduates 2011 (n-173)

As per obtained data of fulfilled researches (see fig.1) we determined confident difference between physical qualities' indicators of graduates: strength  $4.43 \pm 0.06$ ; V-18.5%) and quickness ( $4.6 \pm 0.05$ ; V-15.2%) – 0.17 points with  $t=2.1$ ; quickness and aerobic endurance ( $4.35 \pm 0.06$ ; V-18.6%) – 0.25 points with  $t=3.21$ . statistically confident difference between strength level and aerobic endurance was not found. With it level of applied qualities' development ( $4.16 \pm 0.05$ ; V-17.8%) turned out to be confidently lower than evaluation level of all general physical qualities: strength – by 0.27 points, with  $t=3.29$ ; quickness – by 0.44 points, with  $t= 5.87$  and aerobic endurance – by 0.19 points, with  $t= 2.32$ .

In order to study more specifically cause-effect relation of such state we carried out comparative analysis of interdependence of KUAF graduates' professional readiness and development of their general and applied physical qualities by results of complex state examination by specialty and state examination in discipline “Physical education, special physical training and sports” (see table 1). We used method of paired comparison.

Table 1

Dependence of KUAF graduates' 2011 professional readiness on level of physical qualities (n-173)

| Physical qualities | Professional readiness | Physical qualities, points |      |      | Level of significance   |                         |                         |
|--------------------|------------------------|----------------------------|------|------|-------------------------|-------------------------|-------------------------|
|                    |                        | $\bar{x}$                  | S    | V    | $\bar{x}_1 - \bar{x}_2$ | $\bar{x}_1 - \bar{x}_3$ | $\bar{x}_2 - \bar{x}_3$ |
| Quickness          | High                   | 4.67                       | 0.64 | 13.7 | p>0.05                  | p>0.05                  | p>0.05                  |
|                    | Middle                 | 4.47                       | 0.8  | 17.9 |                         |                         |                         |
|                    | low                    | 4.67                       | 0.62 | 13.3 |                         |                         |                         |
| Strength           | High                   | 4.5                        | 0.74 | 16.4 | p>0.05                  | p>0.05                  | p>0.05                  |
|                    | Middle                 | 4.32                       | 0.91 | 21.1 |                         |                         |                         |
|                    | low                    | 4.47                       | 0.92 | 20.6 |                         |                         |                         |
| Aerobic endurance  | High                   | 4.4                        | 0.75 | 17.0 | p>0.05                  | p>0.05                  | p>0.05                  |
|                    | Middle                 | 4.21                       | 0.91 | 21.6 |                         |                         |                         |
|                    | low                    | 4.6                        | 0.74 | 16.1 |                         |                         |                         |
| Applied qualities  | High                   | 4.4                        | 0.67 | 15.2 | p<0.001                 | p<0.05                  | p>0.05                  |
|                    | Middle                 | 3.81                       | 0.67 | 17.6 |                         |                         |                         |
|                    | low                    | 3.93                       | 0.79 | 20.1 |                         |                         |                         |

Notes:

$\bar{x}_1$  – Physical qualities of cadets with high level of professional readiness;

$\bar{x}_2$  – Physical qualities of cadets with middle level of professional readiness;

$\bar{x}_3$  – Physical qualities of cadets with low level of professional readiness;

Results of analysis permitted to determine that difference between indicators of aerobic endurance, strength and quickness's applied qualities of KUAF graduates of different professional readiness is not equal (see table 1).

Level of strength, quickness and aerobic endurance of future military officers with high, middle and low professional readiness (see table 1) confidently does not differ ( $p>0,05$ ). Though, comparing level of applied physical

qualities, we register statistically confident difference in group of KUAF graduates between high and middle levels (0.59 points with  $t=5.18$ ) and low (0.47 points with  $t=2.14$ ) levels of professional readiness.

The obtained data of all above mentioned results of future military officers' physical development with middle and low levels of professional readiness (see table 1) witness about absence of confident difference between them ( $p>0.05$ ).

For receiving of more complete information about variety of indicators of cadets physical fitness at the stage of stating experiment we found mean square deviation (S) of these indicators (see table 1). It showed variation character of development of strength, quickness and aerobic endurance of future military officers of different professional readiness. With it indicators of variety of applied physical qualities' development of cadets of high and middle professional readiness are equal (0.67 points) and turned out to be less variable by 0.12 points from indicators of graduates of low professional level that witnessed more homogeneous character of the researched indicator just of graduates of high professional level.

Study of distribution of variants of selective population's mean indicators difference from general was fulfilled by us with the help of variation coefficient (V). It proved variability of aerobic endurance's, strength's and quickness's development of all cadets by results of statistical processing of stating experiment's results with the help of mean square deviation. But variation coefficient of applied physical qualities' indicators of cadets with high professional level (15.2%), middle (17.6%) and low (20.1%) levels of professional readiness in comparison with general population (17.8%) turned out to be logically increasing (see table 1) depending on professional qualification of cadets. With it variation coefficient of applied physical qualities' indicators of cadets with high professional readiness showed that their variants are more grouped with higher density around mean arithmetic result and is less by 2.4% than of graduates with middle professional readiness and by 4.9% less than the same of cadets with low professional readiness that proves positive dynamics of such dependence.

Having analyzed the obtained statistic results of physical qualities' indicators variety, of confidently better ( $p<0.05$ – $p<0.001$ ) formation of applied physical qualities of cadets with high professional readiness in comparison with the data of lower professional readiness (see table 1) we can affirm that, considering high percentage of future military officers with high professional readiness (58.4%) such dependence of their physical qualities is not occasional.

For determination of quantitative value and more detail specification of interconnection between formation level and development of general and applied physical qualities with professional readiness of KUAF graduates 2011, we fulfilled their correlation comparing by evaluations (see table 2).

Table 2

*Correlation dependence of formation level of physical qualities and professional readiness of KUAF cadets 2011 (n-173)*

| Physical qualities | Correlation connection, r |
|--------------------|---------------------------|
| Quickness          | 0.068                     |
| Strength           | 0.062                     |
| Aerobic endurance  | 0.007                     |
| Applied qualities  | 0.327                     |

As per results of fulfilled researches (see table 2) we determined actual absence of direct correlation dependence of future AF of Ukraine officers' professional readiness with formation level of their general physical qualities: quickness ( $r=0.068$ ), strength ( $r=0.062$ ) and aerobic endurance ( $r=0.007$ ).

The highest correlation dependence of professional readiness of KUAF graduates 2011 by evaluation is observed (see table 2) with level of their applied physical qualities' development ( $r = 0.327$ ), that proves that such connection is not occasional.

**Conclusions:**

The fact that young military officers with high professional readiness have confidently better formed applied physical qualities ( $p<0.05$ – $p<0.001$ , see table 1), obtained statistical results of physical qualities' variability, direct correlation of professional readiness with level of applied physical qualities' development ( $r=0.327$ , see table 2), permit to note that means of PT, that develop these qualities, facilitate formation of specific mechanisms in cadets' organisms, which grade negative after effects of unpredictable and extreme situations of military educational process by specialty and facilitate increasing of graduates' professional readiness.

Results of fulfilled researches proved opinion of scientists [5-8] and our assumptions about the fact that for achievement of maximal professional readiness of MHEE cadets it is necessary to develop and improve applied physical qualities, the level of whose development is not sufficient in current process of physical training of Ukraine AF officers and is confidently lower than level of general physical qualities ( $p<0.05$ – $p<0.001$ , see fig.1).

In planning of PT educational process for MHEE cadets, main attention shall be paid to development of just applied qualities.

In future it is planned to orientate this researches on improvement of physical training system at MHEE for achievement cadets' maximal readiness for fulfillment of service functions and typical tasks of military service.

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