CORRELATION ANALYSIS OF INDICATORS OF PHYSICAL CONDITION, HEALTH AND PHYSICAL FITNESS OF SOLDIERS INVOLVED IN PEACEKEEPING OPERATIONS

Fedak S.S.
Army Academy named after Hetman Petro Sahaydachnyi

Annotation. *Purpose:* to identify the main physical qualities, which positively influence the physical state, health and military - professional career peacekeepers when performing tasks in different climatic conditions. *Material*: the study involved 98 military service under the contract the first age group (men). Analyzed contingent divided into groups according to climatic conditions of service: in the highlands - 37 person, in hot climates - 35 person, in towns and areas with limited space - 26 person. A correlation analysis between the results of running 100 meters, pulling, running 3 kilometre and indicators of the health and physical condition of the soldiers. *Results*: It was determined that the participation in peacekeeping missions in mountainous areas and in areas with a hot climate is the quality of the underlying physical endurance. With the participation in peacekeeping missions in populated areas and in areas with limited space - this is the strength and speed. *Conclusions*: on improving these physical qualities should focus during lessons in physical training of peacekeepers in the centers of immediate preparation for missions.
Keywords: soldier, endurance, correlation, mission, peacemaker.

Introduction

In connection with representativeness of Armed Forces of Ukraine (AFU) in peacekeeping missions there appeared a problem of subdivisions' and separate military officers' training for participation in peacekeeping operations [10, 11]. Involving in such operations of military officers and subdivisions, which were not appropriately selected, theoretically and practically trained threatens not only success of mission but also is dangerous for the life of peacekeepers themselves [5, 13]. If soldier or officer are not trained properly, other people will have to execute their work. The problem of one military officer can become the problem of state, represented by him. Because his behavior and service functioning will result in conclusions about his country,, made both by local population and by representatives of other countries [7, 12, 14].

Military professional functioning of AFU peacekeepers takes place in different climate, geographic and other conditions of environment [5]. As a rule, peacekeeping functioning is accompanied by a number of negative factors, among which there are: reduced atmospheric pressure and insufficient content of oxygen in mountains, high temperature, reduced humidity and high sun radiation in regions with hot climate; high emotional-nervous tension and demand in quick and decisive actions in restricted by time combat actions in inhabited localities and so on [9, 15]. The listed factors result in decreasing of physical workability, worsening of main organism system's functioning, mental condition of peacekeepers and in reducing of their functioning's efficiency.

As per experience of troops and as a result of scientific researches physical training is considered to be an important mean of ensuring of peacekeepers' high combat efficiency. It is and integral part of combat training and permits to successfully overcome physical and mental loads of military officers, maintain their workability and quickly rehabilitate combat efficiency level in unusual conditions [1, 2, 4, 6, 8, 12].

The work has been fulfilled as per plan of scientific & research works (SRW) of Physical training department of Central department of training and everyday functioning of Armed Forces of Ukraine (AFU) "Model of physical training in Armed Forces of Ukraine o0f 2017 and its prospects". Code: "prospects of PT".

Purpose, tasks of the work, material and methods

The purpose of the research is to determine main physical qualities, which positively influence on physical condition, health and military-professional peacekeepers' functioning during fulfillment of service tasks in different climate-geographic conditions.

The research covered 98 contract military officers of first age group (men). The researched contingent was divided, considering climate-geographic conditions of service: 37 persons – mountain conditions; 35 persons – regions with hot climate; inhabited localities, check points (CP) and restricted in space premises – 26 persons.

Results of the research

In order to determine effectiveness of physical training oriented on improvement of physical condition and health of peacekeeping contingent we carried out correlation analysis of 100 meter run, chin ups, 3 km run indicators and indicators, which characterize physical condition and health of military officers, who fulfilled peacekeeping tasks in different climate-geographic conditions (n=98) (see tables 1-3).

Analysis of correlation coefficients of the researched indicators of peacekeepers, who fulfilled combat tasks in mountains and their results of 100 meters run permits to affirm thet there is no confident interconnection between results of exercises for quickness and indicators of physical condition and health (P>0.01) (see table 1).

doi: 10.6084/m9.figshare.894396

Table 1

Interconnection between indicators of physical fitness of peacekeepers, who fulfilled tasks in mountains (n=37), and indicators of their physical condition and health (correlation coefficient in conventional units)

Physical exercises	Time of tests								
	KI	LI	PI	RI	Time of restoration of heart beats rate (HBR)	IST	PCI	AD	Level of health
100 meters run	0.19	-0.17	-0.18	0.20	0.16	-0.23	-0.18	0.21	-0.20
Chin ups	-0.22	0.24	**0,38**	-0.22	-0.14	0.182	0.207	-0.19	0.27
3 km run	**0.36**	**-0.42**	**-0.35**	**0.46**	**0.52**	**-0.49**	**-0.55**	**0.62**	**-0.49**

Note: r critical – 0.32 (for P<0.05).

KI - Kettle index, LI - living index, PI - power index, RI - Robinson's index, IST - index step test, PCI - index - physical condition, AD - adaptation.

Analysis of interconnections between peacekeepers' physical condition indicators and their chin ups' results witnessed that there is interconnection, but as per all indicators, except power index, it is unconfident (P>0.05) (see table 1). Interconnection of power exercise and poser index of military officers is proved by confident value of correlation coefficient (r=0.38, for P<0.05) (see table 1).

Confident interconnection was determined also between indicators of peacekeepers' physical condition and their results in 3 km run (P<0.05) (see table 1).

The highest correlation coefficients in exercise for endurance were registered with indicators of adaptation potential (r=0.62, for P<0.05), index of physical condition (r=-0.55, for P<0.05), time of HBR restoration up to initial level (r=0.52, for P<0.05) and level of physical health (r=-0.49, for P<0.05) (see table 1).

Weak correlation connection of quickness with most of physical condition indicators was also determined for peacekeepers, who served in hot climate (r= 0.15 – 0.23) (P>0.05) (see table 2).

Table 2

Interconnection between indicators of physical fitness of peacekeepers, who fulfilled tasks in hot climate regions (n=35), and indicators of their physical condition and health (correlation coefficient in conventional units)

Physical exercises	Time of tests								
	KI	LI	PI	RI	Time of restoration of heart beats rate (HBR)	IST	PCI	AD	Level of health
100 meters run	0.20	-0.22	-0.19	0.21	0.15	-0.23	-0.19	0.23	-0.21
Chin ups	-0.21	0.22	**0.40**	-0.25	-0.17	0.19	0.23	-0.19	0.28
3 km run	**0.38**	**-0.39**	**-0.38**	**0.51**	**0.51**	**-0.51**	**-0.53**	**0.59**	**-0.54**

Note: r critical – 0.33 (for P<0.05).

KI - Kettle index, LI - living index, PI - power index, RI - Robinson's index, IST - index step test, PCI - index - physical condition, AD - adaptation.

Studying of correlation coefficient between results of military officers' chin ups and their physical condition indicators witnessed confident interconnection only with power index indicator (r=0.40) (P<0.05) (see table 2). Concerning the rest indicators of physical condition there is interconnection with chin ups' results but not confident (P>0.05) (see table 2).

Structure of interconnection of 3 km run results of peacekeepers, who fulfilled operations in regions with hot climate with indicators of their physical condition has the same character as in case with military officers, who served in mountains. For example, result of exercise for endurance has confident interconnection with all researched indicators (r= 0.38 – 0.59) (P<0.05) (see table 2).

Correlation analysis of 100 meters results of peacekeepers, who fulfilled combat tasks in inhabited localities, CP and other restricted in space premises with indicators of their physical conditions showed that between results of exercise for quickness and all researched parameters confident interconnection is absent (r=0.18 – 0.27 for P>0.05) (see table 3).

Results of power exercise, fulfilled by military officers of this group, like in other groups, have confident connection only with power index (r=0.51 for P<0.05). Confident influence on development og power abilities, on other indicators of physical condition and health was not registered (r=0.19 – 0.37 for P>0.05) (see table 3).

Table 3

Interconnection between indicators of physical fitness of peacekeepers, who fulfilled tasks in inhabited localities, CP (n=26), and indicators of their physical condition and health (correlation coefficient in conventional units)

Physical exercises	Time of tests								
	KI	LI	PI	RI	Time of restoration of heart beats rate (HBR)	IST	PCI	AD	Level of health
100 meters run	0.23	-0.22	-0.18	0.27	0.21	-0.21	-0.20	0.26	-0.22
Chin ups	-0.19	0.37	**0.51**	-0.29	-0.25	0.21	0.22	-0.33	0.30
3 km run	0.38	-0.36	-0.32	**0.40**	**0.46**	**-0.48**	**-0.51**	**0.39**	**-0.49**

Note: r critical – 0.39 (for P<0.05).

KI - Kettle index, LI - living index, PI - power index, RI - Robinson's index, IST - index step test, PCI - index - physical condition, AD - adaptation.

Results of 3 km run is confidently interconnected with most of indicators of peacekeepers', who served at CP and in inhabited localities, physical condition (r=-0.51 for P<0.05), health (r= -0.49 for P<0.05), index of step-test (r= -0.48 for P<0.05), time of HBR restoration (r=0.46 for P<0.05), Robinson's index (r=0,40 for P<0.05), adaptation potential (r=0.39 for P<0.05) (see table 3).

Conclusions:

Analysis of correlation coefficients of exercises' results and indicators of physical condition and health of peacekeepers of all tested groups showed that the most of correlation connections were registered in exercise for endurance (3 rm run) (see tables 1-3). It witnesses about importance of improvement of endurance for peacekeepers in order to keep high level of their physical condition and health as well as increasing of their peacekeeping functioning's efficiency.

Besides, the fulfilled correlation analysis permits to affirm that main physical qualities, which positively influence on physical condition, health and military-professional functioning of peacekeepers, who will participate in missions in mountain areas and in regions with hot climate, is endurance, while for military officers, who will function at CP, in inhabited localities and in restricted in space premises, besides endurance, it is necessary to have high level of power abilities and quickness. Among tested groups of peacekeepers the highest correlation coefficients belonged to military officers of third group (whose professional functioning will take place on CP, in inhabited regions and in premises, restricted in space) (see tables 1-3). It is necessary to concentrate attention during physical trainings with peacekeeping contingent of AFU to improvement of the mentioned physical abilities, in centers of preparation for peacekeeping activity.

The prospects of further researches are oriented on creation of complex of exercises for development and improvement of physical qualities, which positively influence on physical condition, health and military-professional functioning of peacekeepers in the course of tasks' fulfillment, considering climate-geographic conditions.

References:

1 Konovalov V.V., Poddubnyj A.G., Poltavec A.I. *Pedagogika, psihologia ta mediko-biologicni problemi fizicnogo vihovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2013, vol.3, pp. 31-35. doi:10.6084/m9.figshare.653978

2 Korol'chuk M.S., Krajniuk V.M., Ripa L.A. *Psikhofiziologichni osoblivosti vijs'kovo-profesijnoyi diial'nosti* [Physiological characteristics of military-professional activities], Kiev, NAOU, 2005. 420 p.

3 Lisovskij V.A., Mikhuta I.Iu. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2013, vol.6, pp. 38-42. doi:10.6084/m9.figshare.840501

4 Mikhuta I.Iu. Vasiuk V.E. *Pedagogika, psihologia ta mediko-biologicni problemi fizicnogo vihovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2012, vol.4, pp. 88 - 95.

5 Afonin V.M., Popovich O.I., Kizlo L.M., Kuprinenko O.V., Fedak S.S. *Pidgotovka vijs'kovosluzhbovciv do dij v nezvichnikh umovakh navkolishn'ogo seredovishcha* [Training soldiers to act in unusual environments], Lviv, ASV, 2010, 125 p.

6 Poddubnyj A.G. Sukhorada G.N. Kirpenko V.N. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2009, vol.2, pp. 78 - 81.

7 Glebko S.V., Kizlo L.M. *Profesijno-prikladna fizichna ta special'na pidgotovka u vijs'kakh* [Professionally applied physical and special training in the Army], Lviv, LVI, 2004, 112 p.

8 Skavrons'kij O.P. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2009, vol.2, pp. 93 - 96.

9 Pichugin M.F., Griban G.P., Romanchuk V.M., Romanchuk S.V. *Fizichne vikhovannia vijs'kovosluzhbovciv* [Physical Education military personnel], Zhytomyr,ZVI NAU, 2011, 820 p.

10 Shvec' A.V., Luk'ianchuk I.A. *Problemi vijs'kovoyi okhoroni zdorov'ia* [Problems of the military health care], 2006, vol.16, pp. 382 – 387.

11 Shekera O.G. *Novi problemi mizhnarodnoyi mirotvorchoyi diial'nosti Ukrayini* [New problems of international peacekeeping Ukraine], Kiev, 2004, 200 p.

12 Shiian B.M., Vaceba O.M. *Teoriia i metodika naukovikh doslidzhen' u fizichnomu vikhovanni ta sporti* [Theory and methods of research in physical education and sport], Ternopil, Educational book, Bogdan, 2008, 276 p.

13 Bonn K.E., Baker A.E. *Guide to Military Operations Other Than War. Tactics, Techniques and Procedures for Stability and Support Operations*. Domestic and International. 2000, pp. 13–17.

14 Neschadym M.I. *Reform in the Ukrainian Military Education*. NATO Training Group Working Group on Individual Training and Education Developments. Bonn, 1998, pp. 11–20.

15 Van Eekelen W. *Military Support for Civilian Operations in the Context of Peacekeeping Missions*. Report of the Subcomm. on Civilian Security and Cooperation. Civilian Aff. Comm. NATO Parliamentary Assembly. W. Brussels, 1998, p. 15.

Information about the author:

Fedak S.S.: ORCID: 0000-0001-7374-1836; fedak86@ukr.net; Army Academy named after Hetman Petro Sahaydachnyi; Gwardiyska str., bld. 32, Lviv, 79012, Ukraine

Cite this article as: Fedak S.S. Correlation analysis of indicators of physical condition, health and physical fitness of soldiers involved in peacekeeping operations. *Pedagogics, psychology, medical-biological problems of physical training and sports,* 201, vol.1, pp. 80-84. doi:10.6084/m9.figshare.894396

The electronic version of this article is the complete one and can be found online at: http://www.sportpedagogy.org.ua/html/arhive-e.html

Received: 08.11.2013
Published: 28.12.2013