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Psychological fundament of reducing of sportsmen's mistaken actions of fire-applied sport during competition

Abstract. Purpose: to identify individual psychological characteristics which compensate the impact of psychological determinants of erroneous actions of fire applied sport athletes. **Material and Methods:** the study involved 102 fire applied sport athletes from the age of 17 to 30. We used the following methods of psycho-diagnosis "Investigation of anxiety" (auth. Ch. D. Spielberg. Adapted version by Y. L. Hanin); test "Proof Test" by B. Bourdon; method "Intellectual liability"; technique "Prediction"; "Tapping test"). **Results:** the results of research present solving a scientific problem what appears in the disclosure of subjective determinants of erroneous athlete's actions. **Conclusions:** the complex of individual psychological characteristics of fire applied sport athletes makes it possible to optimize their training process and reduce the likelihood of errors during the competition.

Keywords: rescuers, athlete, erroneous action, socio-psychological determinants, fire applied sport.

Introduction. There are difficult emergency situations of a man-caused character and a natural character grow even more often, and as a result – requirements to preparation of the personnel of PSES of Ukraine which are involved in the elimination of consequences of these emergency situations in the conditions of the modern prompt development of technologies and production [2]. The high-quality and faultless performance by them of professionally office tasks needs the high quality special physical preparation which is reached thanks to trainings.

And it isn't casual that the base of special physical preparation for firemen- rescuers is fire and applied sport. Achievements in this sport cause the development and the formation of professionally important qualities, that is psychological properties of a rescuer which provide his resistance to the influence of certain adverse factors of professionally office activity, predetermining a faultlessness of performance of the put task. Also we will note that the performance of different types of exercises of fire and applied to sport are a peculiar imitation of the performance by firemen- rescuers of the official duties in the conditions of emergency situations.

Fire and applied sport is considered an extreme sport and is rather traumatic where the price of a mistake can lead to a mutilation and a death of sportsmen [3]. Therefore the faultlessness of performance of each of types of sports exercises is of great importance.

At the present stage wrong actions are studied through a prism of reliability of an expert working in concrete kinds of activity. The problem of reliability (faultlessness) of the professional activity of experts of an extreme profile is the basic within the main problems of psychology of work, engineering psychology, ergonomics, legal and military psychology, activity psychology in special conditions and psychology of sport.

And though the works of many domestic scientists, in particular L. O. Gontarenko, T. V. Gosteyeva, O. O. Nazarov, D. V. Lebedev, A.S. Kufliyevskiy, S. M. Mordyushenko, S. M. Mironets, I. O. Polyakov, Yu. O. Prikhodko, Y. M. Ryadynskaya, A. G. Snisarenko, O. V. Timchenko, V. D. Togobytskaya, O. I. Sklenya, but others are devoted to different aspects of a problem of professional and functional reliability, faultlessness and efficiency of activity of an expert, in the system of PSES of Ukraine, a final decision of this problem demands additional researches.

Also the scientific works of modern psychologists which deal with a problem of progress of performances at competitions, faultlessness and efficiency of activity in sport (V. A. Ganzen, E. P. Ilyin, M. D. Levitov, A. Ts. Puni, A. V. Rodionov, V. N. Yurchenko, etc.) and a problem of preparedness of a sportsman for a competition, – V. A. Alatortsev, A. D. Gashoshkin, A. G. Grin, G. I. Zharinova, A. D. Zakharov, E. M. Kozlov, A. A. Lalayan, V. L. Marishchuk, L. S. Nersesyan, E. N. Babakov, O. A. Chernikova.

Till nowadays the objective and subjective determinants weren't a subject of special theoretical studying and generalization which lead to the emergence of mistakes in sports activity of the sportsman which will be exhausted with professionally applied sports, including fire and applied sport, in scientific researches only their

separate elements were lit.

The objective of the research: to define a complex of individually psychological features which compensate the influence of subjective determinant of wrong actions of sportsmen of fire and applied sport.

The research tasks:

- to characterize wrong actions of sportsmen of fire and applied sport;
- to allocate and classify the main wrong actions that characteristic for sportsmen of fire and applied sport;
- to define and characterize subjective determinants of wrong actions at sportsmen during the performance of sports exercises;
- to prove possibility of the decrease in influence of subjective determinant of wrong actions by means of a number of individually psychological features of an expert.

Material and methods of the research. Two groups of experts took part in our research. They are working coaches and referees and scientists who were engaged in this perspective. Except experts, sportsmen of fire and applied sport aged from 17 till 30 years old took part in the research (national teams of National university of civil defense of Ukraine (Kharkov), Head department of PSES in the Kharkov area and Academy of fire safety of Heroes of Chernobyl, (Cherkassy) that have sports qualification “ the master of sports of the world class “, “the master of sports of Ukraine”, “the candidate in the master of Sports”, I, II and III sports categories.

So, on the basis of results of expert estimates, all sportsmen of fire and applied sport who took part in our research, divided into three groups on a sign of the level of efficiency of their sports activity.

The first group (the high level of the efficiency of sports activity) included 25 persons, aged from 22 till 30 years old, who has an experience of performances at competitions of the international and national levels over than 5 years and have sports qualification of fire and applied sport.

The second group (the average level of the efficiency of sports activity) included 34 persons, aged from 19 till 24 years old, who has an experience of performances and prize-winning places at competitions of the national level from 3rd to 5 years and have sports qualification.

The third group (the low level of the efficiency of sports activity) included 43 persons aged from 17 till 20 years old. The sports experience on fire and applied sport makes from 1st to 3 years. They have some performances at competitions of regional level in their asset; they have II and III sports categories, or have no sports categories yet.

By means of the battery of psycho-diagnostic techniques individually psychological features were investigated which compensate the influence of subjective determinant of wrong actions of sportsmen. To these techniques enter: «The research of uneasiness» (author Ch. D. Spielberg, the adapted option of Yu. L. Khanin) – for studying of features of emotionally strong-willed sphere of the identity of the sportsman of fire and applied sport; the test “Proof test” of B. Burdon – for the research of degree of concentration and firmness of attention of sportsmen of fire and applied sport; the method “Intellectual lability” – for studying of features of informative abilities of sportsmen; the technique «Forecast» – for the research of features of psychological firmness of sportsmen; the «Tepping-test» – for the identification of force of the nervous system and the establishment of speed of reaction of sportsmen; and also physiologic tests which are based on dynamics of change of arterial pressure by the technique developed by Ya. I. Pugach. The essence of a technique consists in the control of dynamics of the average arterial pressure (CAD) which as a nonspecific reaction of an organism to external influence displays the degree of an emotional pressure and the related measure of the emotional excitement [4–6]. Also there was a used technique of the definition of subjective determinants which define an inaccuracy of actions in special and extreme conditions of the competitive activity [7].

Results of the research and their discussion. In various extreme sports wrong actions can lead to the irreversible consequences connected with such categories of psychological science as “a professional burning out”, “a professional stress”, “a professional deformation”. It belongs to fire and applied sport as it models actions of different rescuers in the conditions of emergency situations.

We understand such element of sports professional activity as wrong actions of sportsmen of fire and applied sport which breaks its purposeful course and leads to a result, undesirable to the sportsman. On our belief, wrong actions of sportsmen of fire and applied sport are poly-factorial, various, differ in times to the manifestation and can lead to negative consequences.

It would be desirable to note that we investigated wrong actions through a prism of the sports exercises

which are spread out step by step where the mistake made by the sportsman will influence the end result. Also we consider that wrong actions need to be considered from a stage of prestarting mobilization and to the finish of the sportsman.

Types and the frequency of wrong actions depend both as on structure of a concrete sport (its contents, conditions, organization), and from individual (including psychological) characteristics of the sportsman. That's why we consider the inconsistency of requirements of the personality to this sport and changes in structure of the personality which result from discrepancy of personal features to conditions of this activity is the main reason of emergence of wrong actions in the competitive activity of sportsmen of fire and applied sport.

The main characteristic stages of sports activity of sportsmen of fire and applied sports were allocated to sport during their participation in competitions: start; finish; overcoming of obstacles, run on a distance; work with the fire and technical equipment; work in a team for the identification of wrong actions of sportsmen of fire and applied sport of PSES of Ukraine and their classification [3].

During our research it was established that sportsmen of fire and applied sport allow the maximum number of wrong actions during competitions. That is we can claim that the mentality of the sportsman is influenced by the "competitive factors" therefore he makes wrong actions.

We managed to define the most widespread mistakes which lead both to low sports results, and to other negative consequences (tab. 1).

Table 1
Main mistakes of fire and applied sport

№	Main components of fire and applied sport	Mistakes
1.	Start	False start (violation of the rules), late start, a weak emissions of a hip, a slowed-down reaction of a sportsman
2.	Finish	The finish is incorrectly executed (crossing of the finishing line by hands, a head, feet; crossing of the next path in the course of an exercise performance, the trunk isn't connected to the hose line to the line of the finish, it is disconnected by hoses among themselves, the branching isn't connected; loss of fire and technical equipment which is used during an exercise performance)
3.	Overcoming of obstacles, run on a distance	Balance of a body, jumping down to a limiting line is lost, the low speed of movement, a cross of others (next) path which led to the reduction of a distance, is ineptly performed a work with fire and technical equipment
4.	Work with fire and technical equipment	Loss of equipment, rolling of fire hoses on the rival's path, the hose line isn't connected, the ladder is incorrectly established or raised, fire isn't extinguished in a baking sheet
5.	Work in a team	Misunderstanding of partners which leads to mistakes during running

Besides, as a result of the research, it was found out that the emergence of wrong actions at sportsmen during competitions and in general the productivity of their performance is influenced first of all by a competitive stress [1]. Sources of a competitive stress are defined at sportsmen of fire and applied sport by means of the first group of experts and sportsmen.

The subsequent research allowed to define the major stressful factors which are the cornerstone of concrete mistakes which are made by sportsmen of fire and applied sport in the conditions of competitions: a bad concentration of attention; the inconsistency of movements with processes of a perception; the inability quickly to work in the conditions of deficiency of time; a wrong perception of time; the increased excitement, a bad dream in a day or some days before competitions. It was proved that the certain stress-factors form subjective determinants of wrong actions of sportsmen of fire and applied sport.

The poll of the second group of experts became the following step of our research that allowed to define individually psychological features of sportsmen of fire and applied sport which compensate and reduce the influence of subjective factors of wrong actions (tab. 2).

Table 2

Interrelation of stress-factors and individually-psychological qualities of the sportsman which are responsible for resilience to mistakes

Stress-factors	Individually-psychological qualities which are responsible for resilience to mistakes
Bad concentration of attention	<ul style="list-style-type: none"> – to store a resistant attention, to distribute and concentrate attention for a long time; – to be able to switch attention from one object to another; – coherence of movements with processes of a perception; – resistance to dynamic loadings; – ability quickly to work in the conditions of deficiency of time; – optimum level of uneasiness
Inconsistency of movements with processes of a perception	
Inability quickly to work in the conditions of deficiency of time	
Wrong perception of time	
The increased excitement, a bad dream in a day or some days before competitions	

The marked-out features of sportsmen were researched in the subsequent by means of the above-mentioned battery of psychodiagnostic techniques.

The results which were received by us according to Spielberg-Khanin's technique allowed to decide on levels of jet and personal uneasiness of the sportsman (tab. 3) which first of all influence his prestarting state and, as a result – on the emergence of mistakes at the sportsman already during a start.

Table 3

Indicator of levels of expressiveness of personal and jet uneasiness at sportsmen of fire and applied sport with a different sports experience

Type	Level of expressiveness	1 st group (%)	2 nd group (%)	3 rd group (%)	Φ (1, 2)	Φ (1, 3)	Φ (2, 3)
PU	High	10,15	8,20	12,04	0,39	0,34	0,07
	Average	65,34	61,57	53,92	0,40	0,85	0,46
	Low	24,51	30,23	34,04	0,46	0,75	0,30
JU	High	8,37	12,45	20,10	1,13	2,17*	1,08
	Average	56,81	62,99	63,09	0,44	0,36	0,57
	Low	34,82	24,56	16,81	1,04	2,65**	1,70*

Note. * $p \leq 0,05$; ** $p \leq 0,01$.

Generalizing the obtained data, it is possible to tell that the most disturbing are sportsmen of fire and applied sport which sports experience makes from one to three years. Such sportsmen can't effectively control the prestarting state and make mistakes already during a start in the conditions of competitions. Proceeding from it, the correctional techniques aimed at the decrease in the level of jet uneasiness at less skilled sportsmen is introduced obviously necessary.

We consider that it is necessary to add that too low level of uneasiness is also undesirable from the point of view of sports reliability (and consequently also faultlessness in the competitive activity) of the sportsman as it can testify to the insufficient level of motivation and neglect rules of competitions.

By the results of the "Proof test of Burdon", it was established that low indicators of volume and concentration of attention of sportsmen of fire and applied sport predetermine the emergence at them wrong actions at different stages of the performance of sports exercises during competitions (tab. 4).

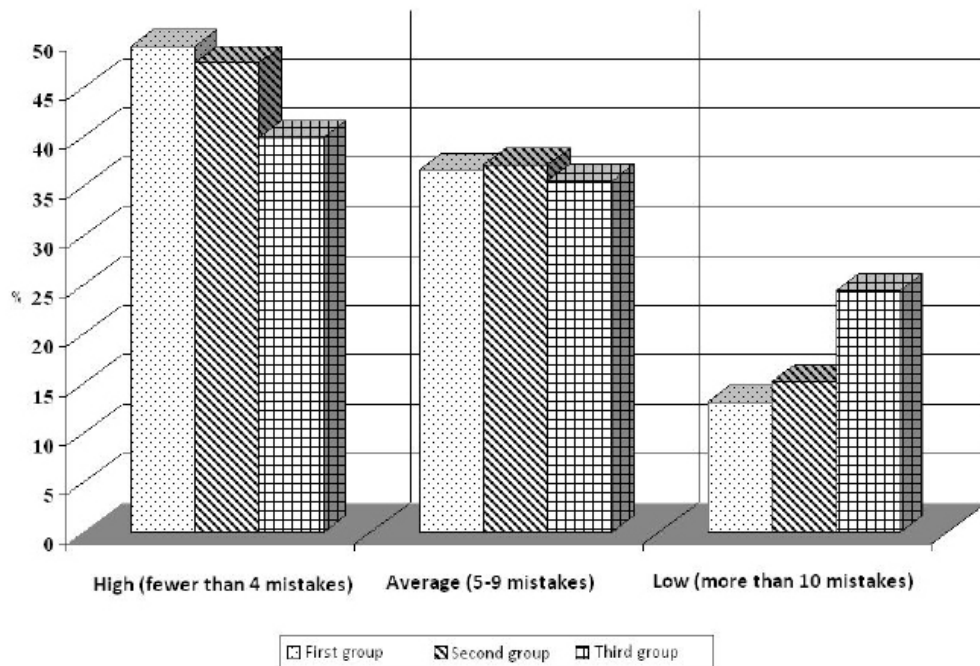
Table 4

Indicator of expressiveness of separate properties of attention at sportsmen of fire and applied sport with a different sports experience and qualification

Properties of attention	1 st group ($\bar{X} \pm m$)	2 nd group ($\bar{X} \pm m$)	3 rd group ($\bar{X} \pm m$)	t (1, 2)	t (1, 3)	t (2, 3)
Volume	909,41±2,99	857,16±2,75	720±3,03	12,62*	44,50*	33,76*
Concentration	3,75±0,75	3,37±0,49	2,90±0,35	0,42	1,03	0,78

Note. * $p \leq 0,05$.

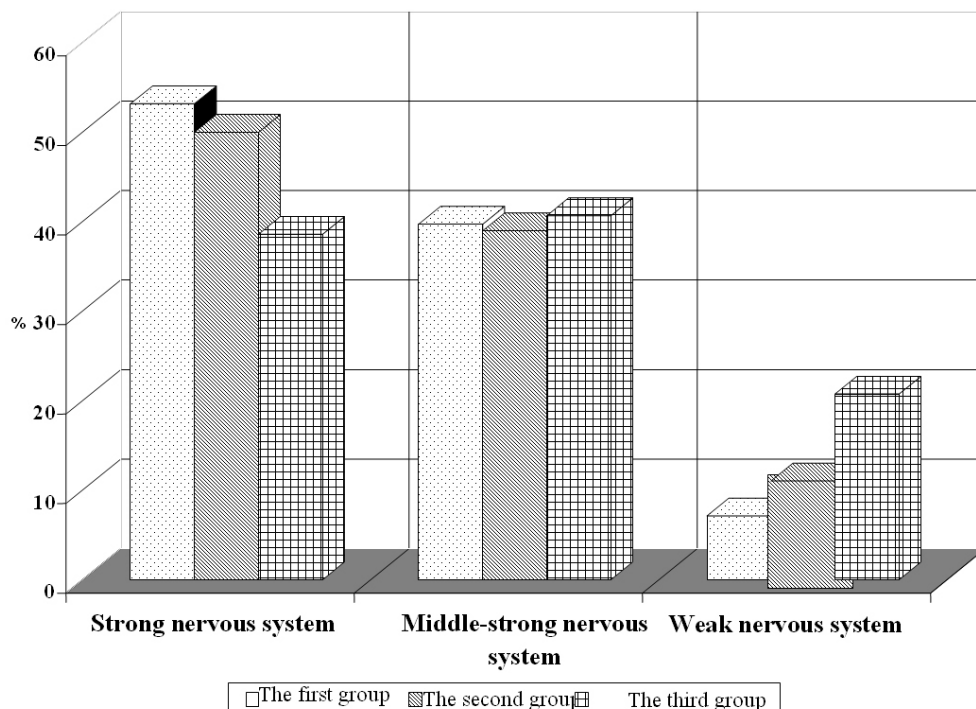
The results by the technique “Intellectual lability” allow claiming what exactly these indicators are in the cornerstone of the short-term forecast of reliability of the sportsman during his participation in concrete competitions (pic. 1).



Pic. 1. Levels of intellectual lability at sportsmen of fire and applied sport with a different professional experience

Thus, sportsmen-beginners of fire and applied sport have a big reliability of emergence of mistakes, already at the beginning of the performance of sports exercises during competitions. The noted features of the intellectual lability of sportsmen of fire and applied sport give the chance to carry out the short-term forecast of reliability of these sportsmen.

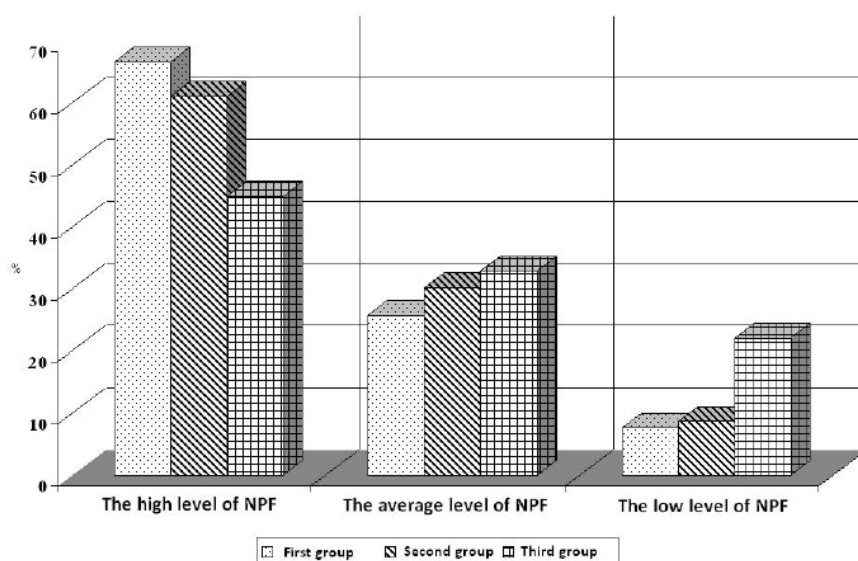
The technique “Tepping-test” allowed defining that sportsmen with a weak nervous system have the bigger reliability of commission of wrong actions even in the conditions of the training process (pic. 2).



Pic. 2. Expressiveness of force of the nervous system at sportsmen of fire and applied sport

We will note that the found features concerning force of the nervous system of sportsmen of this sport of a different skill level give an opportunity of carrying out more effective actions within their sports preparation.

Concerning features of psychological firmness of sportsmen of fire and applied sport, the obtained data allow speaking about the existence of certain divergences in expressiveness of levels of psychological firmness at sportsmen of fire and applied sport (pic. 3).



Pic. 3. Levels of nervously-psychological firmness of sportsmen with different indicators of efficiency of sports activity

It was established during the research that the reliability of emergence of mistakes decreases at the most experienced sportsmen of fire and applied sport thanks to their high rates of psychological firmness during competitions.

Conclusions. The complex of individually-psychological features of sportsmen of fire and applied sport defined during our research which compensate the influence of subjective factors of a competitive stress, gives the chance to optimize the training process of sportsmen of fire and applied sport and to reduce reliability of an assumption mistakes by them during competitions.

The use of objective techniques of the control of changes of an emotional state of indications of CAD allowed to establish that the high progress of the performance was noted at those sportsmen who stored the normal level of an emotional pressure and insignificant emotional excitement in extreme conditions. The excellent feature of such behavior of high-class sportsmen is the restraint at success and composure at failure that provided them the accuracy of an assessment of the current situation in the formation of the operating actions at a choice of adequate forms of behavior.

The analysis of the level of preparedness of sportsmen and the mistakes made by them during the performance of the competitive tasks allowed to classify the main determinants of their emergence. In the basis of their emergence are such factors as a measure of responsibility which is defined by the level of special conditions and the insufficient informational content arises a situation which defines a measure of its extremeness. The quantitative assessment of these components defines the right for an admissible mistake and allows carrying out further necessary measures of the prevention by them.

Prospects of the subsequent researches. The creation of the system model which could beat off substantially features of forecasting of reliability of the assumption of wrong actions by sportsmen of fire and applied sport.

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