DIFFERENCES BETWEENTHE QUALITY OF DEFENSES AGAINST DIFFERENT TYPES OF ATTACKS PERFORMED FROM THE STATE OF MOTIONLESSNESS AND THOSE ONES PERFOMED IN THE CONDITIONS OF PHYSIOLOGICAL STRESS

Original scientific paper

DOI: 10.7251/DEFENG1841006G	COBISS.RS-ID 7752216	UDK 613.86:[331.45:159.944.4.072

Milan Gužvica, PhD
Faculty of Security Science, Banja Luka
Darko Paspalj, PhD
Faculty of Security Science, Banja Luka
Lazar Vulin, MSc
Elementary School, Kozice

Abstract:

Contemporary civilization courses and urgency of situations make the job of a worker of security affairs very stressful, risky and complex, and it requires their complete mental and physical fitness. Accordingly, the teaching process within the course of Special Physical Education also needs to be adjusted, modernised, rationalised and brought closer to the realistic life conditions, so the worker of security affairswould be able to make relevant judgements and decisions in very complicated and dangerous situations. In that regard, in this paper we are interested in effectiveness of the defense against different types of attacks in the conditions of motionlessness and in the conditions of physiological stress. The research has been carried out at a sample of 25 respondents, consisting of the students of the fourth year at the Faculty of Security Science in Banja Luka, aged 23 and 24 years (22 male respondents and 3 female respondents). The research has been carried out after finishing the program of the course of Special Physical Education, being studied during four semesters. After having carried out the testing, based on the descriptive analysis of the heart rates measured in the morning hours (prior to the daily activities) and the values measured right before the activities, it can be affirmed that they have increased more than 55%. By the further analysis, the analysis of differences, the existence of statistically significant differences in the heart rates and defenses against a variable attack has been confirmed, while the existence of statistically significant differences between other observed variables has not been confirmed.

Key words: *heart rate, physiological stress, defense.*

INTRODUCTION

The job of the worker of security affairs is regarded as a very complex and risky job, it is constantly under pressure of events, it is also exposed to the worst types of aggression which can be even life-threatening. Various situations which can be experienced by the worker usually require physical and emotional overload, which can provoke a range of harmful physiological and psychological reactions, which are out of the framework of the regular or usual everyday life, and they are labelled as stressful reactions of an organism. In such situations it often leads to decreased competence, concentration, reasoning and memory performance (the conditions in which solving situational problems is more difficult), and to unadjusted and inadequate behaviour at the certain moment. Such situations cause a certain reaction of the organism to external and internal stimuli, provoke a disorder of the dynamic balance of the body and run a very complex mechanism of hormones and genes. The heart rate is increased, the muscles which are used in a movement and motion arefilled with blood, while other organs which are not a priority at that moment get less blood. This is the situation when a man, already according the abilities of immune system mobilisation, psychophysical resistance, reasoning and controlling a situation, is ready to fight or to escape. Many researchers dealing with theproblematics of stress, among them also Lazarus and Folkman (1984), claim that there are individual differences in reacting to psychological stress, for which their explanation is the different cognitive estimation of a threatening or stressful situation, that is, the cognitive estimation of a threat which occurs in such a situtuation. They claim that cognitive processes are always present and engaged in in a situation of stress, and that they are intervening constructs between the perception of stress and the reaction to it. The same authors claim that cognitive processes are essential in determining whether a situation is dangerous or threatening, so that the cognition determines whether stress will occur or not and what emotional reactions will be like. In addition, (ibid), they claim that the cognition, emotions and behaviour are inseparable in the everyday life. Zajonc (1984) claims that emotional reactions which are typical for stress occur prior to the cognitive ones and the existence of awareness shoud not be referred to as cognition. Sely (1956) defines stress as a nonspecific biological response (physical and psychical) to every unusual requirement which surpasses the adaptive abilities of an organism. He says that stress is an individual reaction to the stressor and that it is a resultantof interactions of the environment and its requirements, as well as the person and their own abilities, possibilities and restrictions. According to Vlajković (1992), H. Sely (1977), says for stress that it is a reaction, a response of an organism to the threatening effect of a stimulus (stressor) from the external or internal environment and that its function is, first of all, defensive. Šupe and associates (2011) say that stress starts already in thoughts and emotions, so that the organism prepares and adapts (the response of the organism to the stressor), which is manifested by a uniform physiological response aimed at the current reaction to the threatening danger. Furthermore, McEwen BS., (1998) and Surtees PG, and associates (2007) refer to all physiological and psychological changes (biological response), as well as the changes in behaviour (behavioural response) occurring in an organism after exposing to stress as stressful reactions. Hence, a stressful reaction has a function of preserving the psychophysicalintegrity of a person, i. e., re-establishing the homeostasis of an organism. The reaction is reflected in intensifying or diminishing certain vital functions, i. e.,

adapting to the newfound conditions through some adequate physiological and behavioral processes. The possibility of reaching the stability through constant changes (allostasis) is of great importance to every person, but especially for those who deal with security affairsprofessionally. Quick adapting to changes, „turning on" and „turning off", synchronising the best responses according to the requiremens of the environment is very significant for the workers of security affairs. Otherwise, the impossibility of adapting the organism to the physiological and emotional excitement, especially if it is extreme, makes a worker inefficient and incompetent to perform professional tasks. Therefore, the worker must be capable of synthesizing the mental and physical activity in order to perform the task in accordance with legal norms and in the best way possible. That means that apart from the motor knowledge and skills, a security worker should also have optimum cognitive and conative abilities, which would enable him to overcome successfully dangerous and stressful situations. Individual characteristics and abilities, such as self-confidence, resistance to stress, the ability of internal locus of control (locus), the development of available overcoming strategies, the ability of subjective estimation of the stressor, i. e. estimation of its threatening effect, as well as the ability of estimation of one's own strengths and possibilities to cope with the stressor are very significant for the efficiency in performing professional duties and responsibilities. Certainly, thereat it should not be forgotten that the strength and intensity of the stressor significantly influence whether an individual will be able to respond to the given hazardin an adequate and optimum way (by intensifying or diminishing the vital functions of the organism). The newfound and sudden, dangerous situations require adequate neuropsychical and physical load (for someone they can be extremely unstimulative, and for someone else they can be a first-class stimulator)and they make the cognitive analysis more difficult. That is why it is necessary for a future worker of security affairs to be completely prepared for new challenges already within their education through the program of the course of Special Physical Education (SPE). It is necessary that through the teaching process they adapt to various and unpredictable changes, which, among other things, require the ability of reacting quickly and releasing the additional energy to face the danger. Certainly, it is not always possible, especially not in the cases of intensive and long-lasting stress which the worker has been exposed to during their professional career. It is believed that the ability of controlling stress and the speed of decision making, apart from other known abilities, including also the high level of techniques, are of the greatest significance for the efficiency of defense and establishment of complete control over the attacker. Considering the abovestated fact, concerning the risk and complexity of the tasks which are expected to be done by a future security worker, there is a need for continuous assessment, constant search and adjustment of teaching to the real life situations. In that regard the **problem** of this research is precisely the efficiency of defense against different types of attacks. The research **subject** is concerned with the quality of defense in the conditions of motionlessness and in the conditions of physiological stress. The **objective** is to determine the difference between the defenses against different types of attacks from the state of motionlessness and in the conditions of physiological stress. Hence, we have been interested in seeing whether there is a statistically significant difference in the mean values of the results obtained while estimating the quality of the defense against punches, kicks and those from an unknown attacker(variability = 50%), but precisely between the defenses from the state of motionlessness and the defenses in the stressful conditions caused by some physical load.

Our assumption is that the quality between the defenses against known and unknown attacks, performed from the state of motionlessness and those ones performed in the conditions of physiological stress, shalldiffer statistically significantly, as well as that the maximum pulse shall have a negative impact on the quality of the defenses performed in some stressful conditions.

RESEARCH METODOLOGY

The sample of respondents

The research has been carried out within the sample of 25 students of the fourth year at the Faculty of Security Science in Banja Luka, male (22 respondents) and female (3 respondents), aged between 23 and 24 years, but only after finishing the program of the course of Special Physical Education. The teaching material has been studied during all four years (in every study year one semester, a total of four semesters), whereby it is important to note that the students had a three-month break before every following semester.

The sample of variables

The sample of variables is divided in two subsamples: the variables for qualitative estimation and the variables for quantative estimation. The first group consisted of the variables related to the defense quality (the defenses ended with a fixation and preparation for binding), in the conditions of motionlessness and in the conditions of physiological stress, whereas the second group of variables consisted of theheart rates prior to the daily activities and the ones right before the assigned activity (of defense). The quality of the following defenses has been checked: OUR – defense against a punch from the state of motionlessness; OURS - defense against a punch in the conditions of physiological stress; OUN – defense against a front kick from the state of motionlessness; OUNS - defense against a front kickin the conditions of physiological stress; OVN – defense from the state of motionlessness against the variable attack and OVNS - defense against the variable attackin the conditions of physiological stress. All the listed variables, by which the defense quality has been assessed, have been assessed using the model shown in Table 1.

Table 1 *Model for assessing the quality of defense performance and establishment of control*

Grade	Rationality and logic	Balance	Speed	Firmness	Rhythm	Control	Precision
10	+	+	+	+	+	+	+
9	+	+	+	+	+	+	-
8	+	+	+	+	+	-	-
7	+	+	+	+	-	-	-
6	+	+	+	-	-	-	-
5	-	-	-	-	-	-	-

The experiment description and the assessment of the quality of defense performance

The testing was conducted in the afternoon hours in a hall covered with tatami. The respondents were in proper sports equipment, the distance between them being about 2 m and they were side facing the cameraman (camera). The attack by punch or kick, as well as the unknown attack was performed from the fighting stance and guard, whereas the defense was performed from the preparatory position. The attacker was asked to perform the attack using the maximum speed and strength, and the defender was asked to perform defenses which would be logical, optimum possible, biomechanically justified, precise, fast and strong, with the optimum rhythm and with necessary control of aggressiveness. The attacks and defenses which were performed from the state of motionlessnessdid not cause fatigue in respondents, which enabled the respondents to perform both attack and defense using maximum speed and strength and full concentration. In the conditions of the maximum heart rate (stressful conditions) the attacks and defenses were performed successively. Prior to performing the attack, the defending respondent had to perform a complex of exercises, whose function was to achieve the maximum heart rate. Thecomplex of exercisesconsisted of: 1. Starting position– standing upright position and 10 consecutive jumps with the knees raised high upward the chest; 2. Starting position- lying on the stomach – taking the fighting stanceand guard maximum fast and consecutive performance of 2 punches on the focuser; 3. Starting position- lying on the back – taking the fighting stance and guard maximum fast and consecutive performance of 2 kicks on the focuser; 4. Starting position- lying on the right side – taking the fighting stance and guard maximum fast and performance of 2 alternate punches and 2 kicks on the focuser; 5. Starting position- lying on the left side and then also on the right side – taking the fighting stanceand guard maximum fast and alternate performance of 2 punches and 2 kicks on the focuser; 6. Starting position – standing upright position- turning around for 360° and performance of 2 punches and 2 kicks on the focuser; 7. Starting position – standing position- forward roll, backward roll and 3 punches on the focuser. The rest between the previous performance of the complex of exercises and the defense and the following complex of exercises and the defense took as much time as the respondents needed to get back to the starting positions by moving slowly. This mode of activitycaused certain fatigue in some respondents (at the beginning the activity was performed in the anaerobic mode, and afterwards it shifted into the mixed mode). The assessment of the defense quality was carried out after performing the defenses and establishing control from the state of motionlessness, and afterwards also with the maximum heart rate. In the known conditions the defense was assessed after the attack by a step forward and a punch by the same hand straight, as well as a front kick. The unknown attack was performed by one of the assigned punches or kicks. The attack was performed from the combat position and guard, and the defense from the preparatory combat position and guard with the distance of about 2 m.

RESULTS AND DISCUSSION

Table 2 shows the results of the descriptive analysis of the heart rates measured in the morning hours, prior to the regular activities and the values measured right before

the defense, as well as the expert grades for the defenses against punches and kicks, and finally, the defenses against a variable attack which were performed in the conditions of motionlessness and in the conditions of physiological stress. It can be seen from the table that values of the heart rate, measured prior to the regular activities, range from 57 beats all the way to 96 beats (M = 73), whereas the values of the heart contractions measured right before performing the defenses range from 108 to 163 (M=132, 8) per minute. The wide range of heart rates measured in the morning hours (prior to the regular activities) can be explained by the sex differences of respondents, as well as their fitness. Namely, dimensions of the female heart are somewhat smaller compared to the male heart. When adults are concerned, the heart volume of men is about 785 ml, of women 580 ml, and the stroke volume, probably because of less body weight, is 25 % less in women than it is in men. Furthermore, although the values of the cardiac output (CO), first of all, thinking of dynamic activities such as endurance, similar in trained and nontrained persons, yet because of the stroke volume (SV), which is higher in the trained persons than in the nontrained ones, the heart rate in the state of motionlessness is lower (Nikolić, 1995). When the fitness is concerned, it can be assumed that a certain number of respondents practiced the physical activity just in classes of the Special Physical Education, while the rest of the respondents had additional physical load, probably such as endurance. In that regard, it is important to mention that the planned curriculum comprised in the course of the Special Physical Education did not require ahigh intensity of load, (a level of load which could have an impact on the development of the functional abilities of an organism was mostly under the stimulus threshold, so that the energy factor was not present sufficiently), and therefore, the respondents who were oriented just to the process of acquiring and improving the basic elements of the technique and their ralations, could notincrease the cardiorespiratory fitness to the higher level. On the other hand, the respondents who used their free time for some additional physical activities, in which the energy factor was present sufficiently, managed to do it to a greater extent. The stronghold for this premise can be found in the generally known fact, and that is that under the impact of the physical load the heart rate slows down, the arterial pressure reduces and the cardiac muscle mass increases, which all together enable a more efficient cardiac function and a better blood flow (perfusion) through the heart in any stress. If one observes the heart rate in the state of motionlessness, right before the defense, one can conclude that the results are the expected ones, already because right before the expected activity certain psychical processes happen. Namely, the impulses in the cerebral cortex come directly and stimulate the cardioacceleratory centre, so that the heart rate increases even 50% to 80% of the overall increase of the heart rate during the activity (Nikolić, 1995). In our case the average heart rate right before the defense, compared to the average heart rate before the daily activities, increased somewhat more than 55%, which proves that our respondents were not at a high level of trainedness. We are obliged to make this conclusion (according to Nikolić, 1995) because of the research showing that the prestart increase of the heart rate is higher in trained persons than in untrained persons (in the case of our respondents it was at the lower-bound level of the average). On the other hand, when the defenses are concerned, it can be seen from the table that for the defense against a punch from the state of motionlessness the obtained mean value is 7.94, and for the defense in the conditions of physio-

logical stress it is 7.88. The quality of the defenses against a front kick from the state of motionlessness is assessed by the average grade of 7.58, and in the conditions of physiological stress the average grade is 7.48. When the defense against an unknown attack from the state of motionlessness is concerned, the obtained mean value is 7.80, while in the stressful conditions the quality of the defense against a variable attack is assessed by the average grade of 7.44. The absolute deviation(AD) for the defense against a punch from the state of motionlessness is 0.99, in the stressful conditions the standard deviation is 1.02 (which confirms the abovementioned premise about the differences in the fitnessof the respondents), and the standard error of the arithmetic mean (SEM)for the defense against a punch from the state of motionlessness is 0.19, while for the defense against a punch in the stressful conditions the value has been calculated (SR = 0.20). The values of the skewness do not go over 1.00, so it can be concluded that there are no significant deviations from the normal distribution. The negative values of the skewness indicate the negative (hypocurtic) asymmetry, that is, a greater number of worse results, in the four variables which are observed, while the defenses performed in the more complex (stressful) conditions (the defense against a kick and the defense against a variable attack) represent a surprise because the positive values have been obtained, i. e., a greater number of better results has been achieved. However, if we think back, the same stress can be stimulative for someone, but for someone else who is vulnerable and predisposed to stress it is a great obstacle. Furthermore, the obtained results of the kurtosis indicate the extreme values, being under the normal values of the distribution (ranging from 0.029 to -1.110), which makes the distribution platykurtic or dissipated. Hence, considering the obtained results, it can be seen at the first sight that the results are the approximate values, that the average quality of the defense from the state of motionlessness really is performed at somewhat higher level, but that there is still a visible difference in the defense quality among the respondents. Since the defense quality has been assessed in the „laboratory" conditions, there is some doubt how efficient the shown defenses would be in the real life, stressful situations. The fact is that the respondents knew each other well, that there was a mutual respect among them and that they were not afraid of potential getting injured and hurt, which was probably the reason why the emotional stress did not occur, as a factor which could have a significant impact on the power of reasoning and the best responses. Apart from that, the doubt is also justified because the defense and the attack visibly deviated from an approximately real life situation, and we know that they mutually dependent because the defense is conditioned by the attack quality. Although the attackers were asked to perform the attacks using the maximum strength, speed and precision, they failed to do so. The attacks were slow, imprecise and „lukewarm", and mostly performed imprecisely and directed next to the target. Somewhat worse average results of the defenses performed in the physiological stress, compared to the average results of the defenses from the state of motionlessness, can be also explained by the fact that in the case of some respondents in the stressful conditions the balance positiondisorder was noticed, so it caused a greater number of mistakes reflected in imprecision at blocking, „late" and insufficiently strong counterpunches, as well as imprecision of standfasts necessary to perform a leverage and the impossibility of timely knocking down the opponent and their fixation.

Table 2 *Descriptive statistics of the defenses against punches and front kicks, as well as against a variable attack with the likelihood of 50%.*

	N	Mini-mum	Maxi-mum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
PUM	25	57.00	96.00	73.3200	2.27649	11.38244	.511	.464	-.405	.902
PO	25	108.00	163.00	132.8000	3.00832	15.04161	.124	.464	-.792	.902
KOOUR	25	6.00	10.00	7.9400	.19858	.99289	-.202	.464	-.241	.902
KOOURS	25	6.00	9.50	7.8800	.20469	1.02347	-.345	.464	-.913	.902
KOOUN	25	5.00	9.00	7.5800	.20952	1.04762	-.703	.464	.087	.902
KOOUNS	25	6.00	10.00	7.4800	.20913	1.04563	.325	.464	.029	.902
KOOVN	25	6.00	9.50	7.8000	.20616	1.03078	-.186	.464	-1.110	.902
KOOVNS	25	5.50	9.50	7.4400	.21664	1.08321	.167	.464	-.788	.902

Legend: *PUM – Pulse in the state of motionlessness; PO – Pulse right before the beginning of the defense; KOOUR – Quality of the defense against a punch; KOOURS - Quality of the defense against a punch after the physical load; KOOUN - Quality of the defense against a kick; KOOUNS - Quality of the defense against a kick in the stressful conditions; KOOVN - Quality of the defense against a variable attack; KOOVNS - Quality of the defense against a variable attack in the stressful conditions*

Table 3 shows the results related to the differences between the heart rate before the regular daily activities and the heart rates right before the defense against an attack, and then also the differences between the quality of the defenses and the establishment of full control over the attacker in the state of motionlessness and in the conditions of physiological stress. It can be seen from the table that the statistically significant differences have been obtained only between the measured heart rates and the defenses against a variable attack. When the heart rate is concerned, then it is something expected (in the above lines it has been explained, and it is related to the difference between sexes, trained and untrained persons…), but when the defenses are concerned, then it is a surprise to some extent because punches and kicks still represent a certain hazard to the integrity of the attacked person. When a hazard occurs, the organism suffers the dynamic balance disorder (the organism tries to adapt to the newfound conditions), which may have a negative impact on the timely reaction, i. e. the efficiency. The newfound situation requires the process of adaptation of the organism, during which the autonomic nervous and endocrine system is activated and the mechanism to overcome stress successfully is initiated and the immune system is mobilized. Having activated these systems the blood flow to the musculature which is involved in a movement and motion increases rapidly, whereas other organs which are not a priority at that moment get less blood, which may have a negative impact on the power of reasoning and reacting, and thus on the defense efficiency. Therefore, the obtained results seem confusing because the requests to perform the complex of exercises and to perform the defenses implied performing as fast as possible. The complex of exercises, their intensity and duration along with performing the defenses caused the increase of the heart rate, almost to the maximum (in this situation the nervous system regarding the oxygen delivery and blood flow is neglected), so it is realistic to expect that the defense in such conditions is somewhat worse compared to the defenses performed with full concentration and from the state of motionlessness. However,

judging by the obtained results, yet it has not actually and completely occurred. Namely, the immune system, which has probably developed to some extent during the training, the acquired experience and the absence of emotional stress have undoubtedly had an impact on the success of the defenses.

If we think back, the cognitive processes are always present and engaged in the situation of stress, they are crucial when determining the degree of danger and they determine the emotional reactions. However, as a result of their good knowledge of each other and mutual trust, the respondents knew in advance which degree of danger could threaten them, as well as because of the security that they would not be injured, nor would they suffer the pain, fear and other emotional reactions typical for stress, these very significant stressors, on this occasion were absent as it is most likely, so this may be the reason of the relative success in defending. This is also supported by the observation related to performing the complex of exercises. Namely, at first it was noted that the exercises were performed in accordance with the imposed requirements, but also that their rate and duration led to their decrease. The requirement was to perform the exercises as fast as possible (in the anaerobic mode and with the domination of fast muscle fibers), so that after a short period of time the fast discharging of energy and transition to the mixed operating mode occurred, whereby the domination was overtaken by the slow muscle fibres. As a result of this, and probably as a result of theweaker nerve conduction, there have been noticed the weaker muscle contractility, weaker expression of force, worse coordination and less precisionwhen performing the techniques. This observation and the assumption are expected and in accordance with the paper of Bok and Jukić (2013), who in their paper discuss the share of the aerobic metabolism in the case of the individual sprint repetitions for which they say that it is very small (about 3-8%), and after the tenth sprint that share is up to 40%. The share of the metabolism of the anaerobic glycolysis is relatively big at an individual sprint (about 32 -40%), whereas its share decreases at the repetition of sprints, so that in the tenth sprint lasting for 6 seconds it is just 9%. Hence, to these abovestated reasons, partially confirmed premise about the statistically significant differences, apart from the absence of emotional stressor, there may be also added the observation that the respondents did not master the specific fitnesssufficiently, nor did they master the technique which would provide them with the rationality when performing the complex activities.

Table 3 *the significance of the differences between the observed variables: koour - koours; kooun – koouns; koovn – koovns.*

		PAIRED DIFFERENCES					t	df	Sig. (2-tailed)
		M	Std. D.	Std. E. M.	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PUM - PO	-59.48	14.2423	2.84846	-65.35894	-53.60106	-20.88	24	.000
Pair 2	KOOUR - KOOURS	.06000	.65064	.13013	-.20857	.32857	.461	24	.649
Pair 3	KOOUN - KOOUNS	.10000	.97895	.19579	-.30409	.50409	.511	24	.614
Pair 4	KOOVN - KOOVNS	.36000	.87226	.17445	-.00005	.72005	2.064	24	.050

CONCLUSION

In this paper the qualitative difference between the defense from the state of motionlessness and in the state of physiological stress, to be specific, against the attack by punch, by kick or an unknown attack with the variability of 50% has been researched. The research has been organized within a sample of 25 respondents (the students of the fourth year at the Faculty of Security Science in Banja Luka), whereby there were 22 male respondents and all in all 3 female respondents. The respondents were aged between 23 and 24 years. All respondents were clinically healthy, without any visible physical defects or morphological aberrations. The teaching material has been studied during all four years (in every study yearone semester, a total of four semesters), whereby it is important to note that the students had a three-month break before every following semester. The mathematical processing of the obtained data has been done on the PC computer, using the statistical application program of SPSS-20. All the data obtained by this research have been processed using the descriptive and comparative statistical procedure. Testing the significance of the differences in the arithmetic meansobtained from the conducted tests has been done usingthe paired sample T-test, whereby the statistically significant differences have been obtained only between the heart rates and the defenses against an unknown attack, while between the defenses against an attack by punch and by kick the statistically significant differences have not been obtained, by which the assumed hypothesis has been partially confirmed. The statistically significant differences between the heart rates priorto the daily activities and the ones right before the defense can be explained by the sex differences, morphological characteristics of the respondents, their fitness, as well as the psychological processes occurring right before the activity. When it comes to the defenses against an attack, our expectations have proved true only in the case an unknown attack, whereas in the case of an attack by punch or kick it has not occurred. The obtained results can be explained by the fact thatthe respondents knew each other well, mutually trusted each other very much and knew in advance that they would not suffer any painnor would they be injured. Apart from this, the attacks were imprecise (they did not hit the targets), slow and lacking the necessary minimum of strength manifestation. As a result of this, the emotional (psychical) stressor was absent, so that the addition with physiological stress, which would be caused by some physical load, did not occur. This seems to be reasonable considering that just the educational process is concerned. Therefore, when the education process of the staff of security affairs is concerned, it is suggested to adjust additionally the curriculum to the real life situations, especially in its final phase. It is believed that changing the distribution of classes(theoretical, practical lectures and exercises) would contribute to creating the engram of the motor programs, by which a greater efficiency of their realization in more complex situational conditions would be achieved. Namely, within the curriculum and syllabus of the Special Physical Education it is necessary to change the relation between practical lectures and exercises, in favor of the exercises. In that way students could increase the intensity and quantity of repetitions of certain motor programs, certainly adjusted to the optimum abilities and preferences of each individual, by which there would be created the conditions to achieve more quickly a high level of knowledge acquisition, i. e. the automatizaion of the techniques and the possibilities to apply them in practice. It is believed that this approach could initiate further research of this problematics and thus contribute to educating the abovementioned staff more effectively.

REFERENCES

- Bok, D., Jukić, I. (2013), Ability to repeat sprints: Limiting factors and training strategies. Clinical preparation of athletes, p.54, Proceedings, Zagreb.
- Nikolić, Z., (1995), Physiology of Physical Activity, University of Belgrade.
- Lazarus, R:S., and Folkman (1984), Stress, appraisal, and coping. New York, Springer
- Zajonc, R:B., (1984) On the primacy of affect. American Psychologist, 39, 117 -123.
- Sely, H., (1956) The stress of life. New York, McGraw-Hill.
- S. Šupe, Z. Poljaković, Lj. Kondić1, L. Unušić, D. Alvir, (2011), Neurological basics of stress and risk of stroke development, Neurol. Croat. Vol.60, 1McEwen BS. (1998), Stress, adaptation, and disease. Allostasis and allostatic load. Ann N Y Acad Sci 840: 33-44.
- Surtees PG, Wainwright NW, Luben RL and associates (2007), Adaptation to social adversity is associated with stroke incidence: evidence from the EPIC-Norfolk prospective cohort study. Stroke; 38: 1447-53.
- Vlajković, J. V. (1992). Life crises and their overcoming. Belgrade: Nolit.