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## THE IMPACT OF CERTAIN MOTOR AND CONATIVE PARAMETERS IN SHOOTING SPORT

### 1. INTRODUCTION

The specificity of shooting is related to the fact that every competitor competes independently of the other competitors. In shooting sport, at this standpoint, it is accentuated the fighting sport with its boundaries. Thus, that which stands in the path between the competitor and proficient performance, as well as the best possible result, is not the other competitor, but the margins of the technique and the psychology of the sport itself. Namely, for this reason, shooting can be considered as a sport where psychology is closely related to the score, rather than in any other sport (Vodopivec, V. 1977).

The exultation (excitement) can be defined as a state of the body that may change over the continuity; from coma and deep sleep state in one hand and maximum exultation (excitation) on the other hand that occurs, e.g. in the occurrence of intense feelings of deep fear, anger or euphoria, (Petzit, 2005). At the bodily level, excitement or raised impetus is seen in the form of increased muscle tonus, increased blood pressure, increased heart pulse, and increased sweating and breathing frequency. We are aware that in the shooting sport, it is exceptionally important for the sportsman to not become very excited during the execution, but how much is the desired level of excitement, that is, what is the optimal level of excitement depends on the personality of each sportsman therefore it is extremely important to apply individual approach and adapt it to every sportsperson. It is also important to discern that poor sport shooting performance during the competition is often more a result of excessive excitement, rather than insufficient excitement (Balent, B. 2010).

Psychological factors in shooting are numerous, so that, the more the sportsman progresses the more he/she will boost the need for a greater control over all the factors in an attempt to advance. Many psychologists informally argue that the sport shooting is articulated as the function of calculation: One may, with little effort and in a short time achieve high score, but following a certain progress, development slows down and it almost stagnates, thus, the coach, the psychologist, the shooter, the surrounding and the team must make an effort for each additional round afterwards, to enable the sportsman to achieve the highest peak (Drenovac, M. 2011)

Shooting sport belongs to the sports in which the motor activity is very limited from the circumstances of target hitting by special weapons. It is a competitive sport that develops the skills of hitting a moving and fixed targets using different types of weapons, in particular different types of rifles and pistols.

When targeting the target by a rifle, precision plays a crucial role because the target is the smallest target of all disciplines - the size of the target dot that provides the maximum number of scoring points for a shot - ten, is the average size of a sewing

needle. Without precision shooter may not be successful, furthermore experiments have shown that the shooter's precision is associated with the individual ability to keep up the intensity of concentration, which is often practiced during training process of the shooters (Shri Prasad Shastri, 1958).

### **1.1. The aim of the research**

The aim of this work paper is to research the impact of motor and cognitive parameters in the success of firing/shooting (hitting the target) in sport shooting.

### **1.2. Hypothesis of the research**

Out of the motor and cognitive variables like predictive parameters in execution of firing in 50 m (hitting the target), the most impact will have the cognitive variables.

## **2. METHODS OF RESEARCH**

### **2.1. The sample of entities**

The population in which the sample of the researched ones was taken, is defined as a population of competitors of the following sport shooting clubs: "Jeton Rama" from Viti, "Katana" from Obiliq, "Besim Mala" from Drenas, "Polici" from Pristina, "Drenica" from Skenderaj, "Z.Hajdini" from Prishtina. Research was executed in 2010. The research included the 37 shooters between the ages of 18 and 29 years old.

### **2.2. The sample of variables**

This research applied five motor tests, two cognitive tests and one specific sport shooting test. Motor tests applied, are (Kurelić et al.1975): Wide Pushups (WIPU), Keeping the weight 5 kg with outstretched hands before (KO5HB), Flexed Arm Hang (FLAH), Running 5X20m (R5X20), Long Jump with places (LOJP). Cognitive tests applied are (Momirović, 1971): Anxiety (A1), Aggressiveness (T15). Test specific: Shooting at 50m from the lying position (SH50LP).

For each motor, cognitive, and specific variable the following values have been calculated: Central core parameters and distribution, Distribution curve has been tested through asymmetry coefficient ("skewness"), and height of distribution through extension coefficient ("kurtosis"). The impact of predictive variables into criterion variable was proved by the regressive analysis. Analyses were conducted by SPSS 8.0 program

## **3. RESULTS AND DISCUSSION**

Basic statistical parameters applied in motor, cognitive tests and a specific motor test in the sample of the researched ones, are shown in Table 1.

**Table 1.** Central core parameters and parameters of the distribution of motor and cognitive variables, and of the specific test.

	N	Min	Max	Mean	Std. Dev	Skew	Kurt	C.V
WIPU	37	23.00	92.00	48.4595	13.54333	.441	1.783	27.95
KO5HB	37	20.00	86.00	53.9459	17.49753	-.228	-.924	32.43
FLAH	37	11.00	113.00	49.4595	21.66102	.729	1.145	43.79
R5x20	37	45.30	56.30	49.3454	2.75844	.579	-.374	5.59
LOJP	37	1.87	2.66	2.1922	.23731	.667	-.730	10.82
A1	37	23.00	42.00	33.4324	5.79531	-.578	-.884	17.33
T15	37	25.00	39.00	31.2432	3.98194	.268	-.679	12.74
SH50LP	37	10.00	20.00	15.4054	2.87189	.148	-.936	18.64

Results obtained indicate that, all of the tests applied in this research, have a big difference between the minimum and maximum results. However, although there is such a difference between the minimum and maximum results, no variable values show no deviation from normal distribution.

As regards to the homogeneity of the group of tested ones according to the arithmetic average and the coefficient of variation (Mean and CV), it can be said that we are not dealing with a homogeneous group of tested ones, according to the results achieved. This was not expected, when considering the fact that all the tested ones belong to elite shooting Clubs and have approximately equivalent knowledge of shooting. High values of standard deviation lead to the conclusion that the tested ones have a higher variability and different results (not homogeneous).

In Table 2 are presented the results of regressive analysis and of the motor and cognitive tests (as predictive variables) and of the specific test, shooting at 50 meters from the prone position (criterion variable).

Connectivity of the whole system of predictive independent (motor and cognitive) variables and the dependent criterion variable (specific test shooting at 50 meters from the lying position) represents an insignificant statistical correlation. This shows, that the coefficient of multiple correlation, has the value  $R = .43$  which explains the variability shared between predictive system and criterion variable about 19% ( $R^2 = 0.189$ ).

Once, the distribution  $F$  was obtained resulted with the distribution of multiplying the two variances, it was necessary to appoint two degrees of freedom.

First scale of freedom is equal to the number of predictive variables ( $df = n$ ), whereas the second one, is the number of entities reduced the number of predictive variables minus 1 ( $df = N - n - 1$ ).

It may be pointed out that the  $F$ -test of this analysis is not valid because its coefficient is (0.966). This shows that the multiple correlation has little value, in the concrete case of this paper is not significant ( $Sig = .0474$ ).

**Table 2.** Regression analysis - connectivity and the impact of motor and cognitive parameters within criterion variable (shooting at 50 meters from the prone position)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.435	.189	-.007	2.88135

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.155	7	8.022	.966	.474 <sup>a</sup>
	Residual	240.764	29	8.302		
	Total	296.919	36			

Model		Unstandar. Coefficie.	Std. Error	Standardi. Coefficie.	t	Sig.
	B			Beta		
1	Constant	18.692	17.652		1.059	.298
	WIPU	.007	.063	.034	.116	.908
	KO5HB	.046	.039	.282	1.178	.249
	FLAH	-.002	.026	-.019	-.095	.925
	R5x20	-.176	.254	-.169	-.694	.493
	LOJP	2.747	2.195	.227	1.251	.221
	A1	-.051	.095	-.103	-.537	.596
	T15	-.052	.138	-.072	-.378	.708

Once the multiple correlation or manifold correlation (R) is not valid, it is absurd to seek independent coefficients (Coefficient by Beta) that are valuable. However if we take a deeper analysis of the given table, in terms of the impact of predictive variables on the criterion ones, we see that none of the independent variables (predictive) does not affect the specific task, shooting at 50 meters from the prone position (SH50LP). This illustrates the complexity of the impact of various factors such as those internal and external to the execution of the specific task, presented in this case, by means of a precision test, shooting at 50 meters from the prone position is different. It seems that during the execution, at explosive force, particular importance have, except the muscles of the legs, as well as those of the arms and thorax /chest, and those of the body. These muscle groups affect directly the stability of the body during the execution of motor tasks shooting at 50 meters from the lying position.

The set forth hypothesis, stating that motor and cognitive variables as predictive parameters in execution of firing in 50 m (hitting the target) were the largest impact will have the cognitive variables was not performed, because these did not have an impact on the implementation of this specific motor task.

#### 4. CONCLUSION

Conducted research provides significant information, which is important for the assessment of the level of physical preparation and of cognitive attributes amongst the youth that are members of the sport shooting elite clubs in Kosovo. The research was conducted during 2010. In the elaboration of the results, were included the results of the shooters who have expressed the willingness to be part of this research. The group of the researched, according to the arithmetical average and the coefficient of variation (Mean and C.V) shows that we are not dealing with a homogeneous group of shooters according to the results achieved.

Correlation of the entire system of the independent predictive variables (motor and cognitive) and the dependent criterion variable (specific test shooting at 50 meters from the lying position) shows no significant statistical connection. This is established on the basis of multiple correlation coefficient which has the lowest value that explains the common variability between the predictive system and the criterion variable with only 19%. During the execution of a specific task - shooting at 50 meters from the prone position, almost certainly the motor dimensions and the cognitive features in the execution of this task will not kick in due to the position of execution of the specific task where almost whole the body is resting on the ground and nearly no motor skills do come into expression.

#### 5. LITERATURE

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*Goal of the research was to corroborate influence of some motoric and conative parameters in shooting sport. In this regard, the research was carried out with 37 sportsman aged from 18 to 29.*

*Five motoric variables have been used, two variables for assessment of conative traits and one specific variable for assessment of accuracy in shooting sport.*

*The data collected demonstrates that motoric and conation variables used in this paper do not influence shooting sport – firearms shooting from 50m from ground position. In shooting sport from 50 meters distance in ground position the surface of support is bigger, legs, body and arms that hold the firearm are supported by ground and therefore the conative and motoric traits do not stand out.*

**Key words:** *shooting sport, contesters, conative traits, motoric variables.*