DETERMINATION OF INFLUENCE AND DIFFERENCES IN SPECIFIC PROFESSIONAL SAMPLE OF EXAMINEES

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Abstract
In a sample of 80 respondents, population special forces, divided into three subsample age: the first group of 27 to the age of 25 years, the second group of 28 aged between 26-30 years and the third group of 25 aged 31 - 36, made a study of motor abilities as part of the program structure to carry out the unit. In this research procedure isolated four motor variables: push-ups, abdominal muscles, pull-ups and running the 3000m. For each of the variables according to the number of the engine under test and the time for running the 3000 meters obtain credits. In the research procedure was used descriptive method, classification of frequencies of the motor performance and determining, the impact of the criterion on prognostic variables and determining the differences between respondents. The results of descriptive statistics, we can conclude that the variables push-ups, sit-ups and points, there are major differences in the tests, which bear witness high rates of standard deviation, showing a greater deviation from the average value, and coefficients of variability that tell us higher percentage of variation of the standard deviation from the mean. The results of the regressive analysis show statistical significance, that motor variables as significant prognostic influence criteria variable, which tells us that the points scale better evaluates the results and is a good representative as a criteria for achieved results. As a general conclusion of the research in three subsample respondents according to age, we can conclude that there are no statistically significant differences between them, and the majority of respondents are in good physical preparation.

Key words: *motor skills, motor tests, variables, analysis, regression, influence, differences.*

Introduction

The research represents a procedure which includes 80 respondents with a specific profession to the police, for whom physical readiness is one of the most important capabilities, on which depends the success of their job.

Due to the work performed by, they need daily exercises to maintain psycho motoric ability, and they have multiple controls for their physical capability year round.

Subject of the research are five motoric parameters included in the curriculum of the unit to control physical capabilities of the police officers.

Objective of the research is to determine the frequencies of the results at five motoric parameters, to determine the impact of motoric parameters on the criteria and to determine the differences among the respondents.

Methods

The sample of respondents constitutes the population of a specific police unit, a total of 80 aged 25 to 36 years. All of them are in a favorable physical readiness, because of everyday preparing for certain motoric skills, also using a lot of games. Respondents are divided according to their age into three groups:

--> First group a total of 27 aged to 25 years
--> Second group a total of 28 aged 26-30 years
--> Third group a total of 25 aged to 31-36 years

Program for assessment of motoric skills of respondents contains four motoric variables: push-ups, pull-ups, abdominal musculature, and running 3000 meters. For each of the variables according to the number of motoric test and according to the time of running the 3000 meters are obtained points.

Table 1. Points for test of motoric variables.

Points	Push-ups	Abdominal m.	Pull-ups	3000 м.
0	10 и <	15 и <	2 и <	19.10 и >
2	11 – 15	16 – 20	3	19.09 – 18.21
4	16 – 20	21 – 26	4 – 5	18.20 – 17.41
6	21 – 25	27 – 33	6	17.40 – 17.00
8	26 – 29	34 – 39	7	16.59 – 16.30
10	30 – 35	40 – 46	8	16.29 – 16.01
12	36 – 41	47 – 52	9	16.00 – 15.41
14	42 – 47	53 – 60	10 – 11	15.40 – 15.01
16	48 – 53	61 – 65	12 – 13	15.00 – 14.31
18	54 – 59	66 – 70	14 – 15	14.30 – 14.01
20	60 и >	71 и >	16 и >	14.00 и >

Results and discussion

Table. 2 Results of descriptive statistics

Variables	N	Mean	Min.	Max.	Range	Std. Dev.	CV%
Push-ups	80	53.8500	30.00	76.00	46.00	5.723	10.62
Abdominal	80	60.4625	41.000	77.00	36.00	6.180	10.22
Pull-ups	80	10.75000	7.00	16.00	9.000	2.236	20.74
3000 м	80	15.1955	11.35	18.69	7.340	1.177	11.69
Points	80	60.60000	42.00	78.00	36.00	6.708	11.05

By analyzing table. 2 which shows the descriptive statistical values, we can conclude that the variables push-ups, abdominal and points, there are big differences in the tests, which bear witness high coefficients of the standard deviation, showing a greater deviation of the average value, and coefficients of variability that tell us a larger percentage of variation of the standard deviation from the arithmetic mean. Slightly smaller value of deviation of the sample mean show coefficients of the standard deviation in the variables of pull-ups and running 3000 meters.

But it is about results that are of no greater deviation of the sample mean, ie the respondents are all with results that are not too high nor very low, they practically in both of these variables did not differ much in performance on the test, therefore the span of the results is lower.

Practically both of these variables are are tougher for respondents. The results presented in table. 3 tell us that 51 respondents or 63.75% in the test of push-ups are found around the arithmetic mean. Of the respondents 22 or 27% are above the arithmetic mean, and only a small number, 5 students have weaker results from the mean value.

With variable abdominal most of the respondents according to the results are around the arithmetic mean X = 60.46, about 52 respondents (65%), while 6 respondents or 7.5% do abdominal below the value of the central value. The largest number of respondents at the variable pull-ups, a total of 33 or 41.25% performed pull -ups within the arithmetic mean of X = 10.75. Half of the respondents - 50% do more pull-ups than the central value.

Table 3. Frequencies of the variable push-ups.

Frequency	Count	Cumul. Count	Percent	Cumul. Percent
30.0000<=x<35.0000	1	1	1.25000	1.2500
45.0000<=x<50.0000	4	5	5.00000	6.2500
50.0000<=x<55.0000	51	56	63.75000	70.0000
55.0000<=x<60.0000	11	57	13.75000	83.7500
60.0000<=x<65.0000	11	78	13.75000	97.5000
70.0000<=x<75.0000	1	79	1.25000	98.7500
75.0000<=x<80.0000	1	80	1.25000	100.0000
Missing	0	80	0.00000	100.0000

Table 4. Frequencies of the variable abdominal.

Frequency	Count	Cumul. Count	Percent	Cumul. Percent
40.0000<=x<45.0000	1	1	1.25.000	1.2500
50.0000<=x<55.0000	5	6	6.25000	7.5000
55.0000<=x<60.0000	28	34	35.00000	42.5000
60.0000<=x< 650000	24	58	30.00000	72.5000
65.0000<=x<70.0000	12	70	15.00000	87.5000
70.0000<=x<75.0000	9	79	11.25000	98.7500
75.0000<=x<80.0000	1	80	1.25000	100.0000
Missing	0	80	0.00000	100.0000

Table 5. Frequencies of the variable pull-ups.

Frequency	Count	Cumul. Count	Percent	Cumul. Percent
7.00000<=x<9.00000	7	7	8.75000	8.7500
9.00000<=x<11.0000	33	40	41.25000	50.0000
11.0000<=x<13.0000	25	65	31.25000	81.2500
13.0000<=x<15.0000	7	72	8.75000	90.0000
15.0000<=x<16.0000	8	80	10.00000	100.0000
Missing	0	80	0.00000	100.0000

Table. 6 Frequencies of the variable running 3000 metres

Frequency	Count	Cumul. Count	Percent	Cumul. Percent
11.3500<=x<12.3500	1	1	1.25000	1.2500
12.3500<=x<13.3500	2	3	2.50000	3.7500
13.3500<=x<14.3500	12	15	15.00000	18.7500
14.3500<=x<15.3500	37	52	46.25000	65.0000
15.3500<=x<16.3500	13	65	16.25000	81.2500
16.3500<=x<17.3500	11	76	13.75000	95.0000
17.3500<=x<18.3500	3	79	3.75000	98.7500
18.3500<=x<19.3500	1	80	1.25000	100.0000
Missing	0	80	0.00000	100.0000

According to the frequencies of table. 6 respondents achieved times close to the arithmetic mean, a total of 37 respondents or 46.25%. A smaller number of respondents 28 or 34%, achieved times weaker than the central value. From Table 7, where are presented the frequencies of the variable points only 22 of the respondents or 27.5% accomplished points within the central value, which is X = 60.6.

Of the respondents 24 or 12.5% reach poorer results of the arithmetic mean. According to the values of the results in Table 8 in which is presented regression of predictor system of variables with criterion of points, is noted that the four motoric variables as prognostic system has an impact on criterion variable Q (F) <. 00000. Multiple correlation RO = .87 has a high value, which means a great influence on predictor system on the criteria. The coefficient of determination Δ = .76 shows that 76% of the variance of the criterion can be explained by the variance of the system predictor variables. Individually impact shows all 4 motoric dimensions that have partial impact on the criterion. By analyzing the table no.9 we can say that the three groups divided according to age, respondents did not differ in terms of the central values, Wilks-lambda = .886663 which value in approximation of Rao s R = .905065 and degrees of freedom df 1 and df = 10 2 = 146 is not significantly at a level of p =. 530 306 (p<.05). From table. 10 of univariate differences, according to values obtained for the three groups according to age, there are no statistically significant differences in arithmetic means in multivariate space.

Table. 7 Frequencies of the variable points

Frequency	Count	Cumul. Count	Percent	Cumul. Percent
42.0000<=x<44.0000	1	1	1.25000	1.2500
48.0000<=x<50.0000	1	2	1.25000	2.5000
50.0000<=x<52.0000	4	6	5.00000	7.5000
52.0000<=x<54.0000	2	8	2.50000	10.0000
54.0000<=x<56.0000	6	14	7.50000	17.5000
56.0000<=x<58.0000	10	24	12.50000	30.0000
58.0000<=x<60.0000	11	35	13.75000	43.7500
60.0000<=x<62.0000	11	46	13.75000	57.5000
62.0000<=x<64.0000	7	53	8.75000	66.2500
64.0000<=x<66.0000	5	58	6.25000	72.5000
66.0000<=x<68.0000	10	68	12.50000	85.0000
68.0000<=x<70.0000	3	71	3.75000	88.7500
70.0000<=x<72.0000	3	74	3.75000	92.5000
72.0000<=x<74.0000	3	77	3.75000	96.2500
74.0000<=x<76.0000	1	78	1.25000	97.5000
76.0000<=x<78.0000	1	79	1.25000	98.7500
78.0000<=x<80.0000	1	80	1.25000	100.0000
Missing	0	80	0.00000	100.0000

Table. 8 Regression analysis of the variable points

	BETA	St.Err. of BETA	B	St.Err. of B	t(75)	p-level
Intercpt			41.98845	6.766740	6.20512	.000000
Push-ups	.277004	.060353	.32465	.070735	4.58971	.000017
Abominal	.364096	.061456	.39518	.066703	5.92451	.000000
Pull-ups	.454002	.057493	1.36204	.172483	7.89666	.000000
3000м.	-.432172	.056379	-2.46169	.321141	-7.66543	.000000

Ro = .872928 R^2 = .762004 F (4.75)=60.033 Q(F)<.00000

Table. 9 Multivariate differences at the three groups according to age

	Wilks Lambda	Rao ś R	df 1	df 2	p-level
1	.886663	.905062	10	146	.530306

Table. 10 Univariate differences at the three groups according to age

	Mean sqr Effect	Mean sqr Error	F (df 1, 2) 2.77	p-level
Push-ups	32.53238	32.76799	.992810	.375227
Abdominal	72.55727	37.30874	1.994779	.149980
Pull-ups	4.27238	5.01890	.851259	.430855
3000 м.	1.70529	1.37876	1.236827	.296006
Points	48.53915	44.91067	1.080793	.344417

Conclusion

After conducting research procedure and after established methodology, we came to a certain knowledge of motorical structure of the unit. According to the variable frequency of push -ups, 51 respondents are in the level of arithmetic mean (63.75%), 24 respondents are above the the value of the central value, and 5 respondents achieved lower results. It can be concluded that for this test respondents are well prepared because on average they do 50-55 push-ups. In the second motoric test where it has been tested the abdominal musculature, 52 respondents (60.46%) are around the central value, 22 respondents are above the it, and 6 respondents are below the arithmetic value. Also for this motoric task respondents mostly are in the zone of central value with average 55-65 liftings, 22 respondents possess greater motoric capabilities to perform in the test while only 6 respondents are in the zone of 45-50 frequency which is solid preparedness.

One of the more difficult motoric tasks for respondents is the test with which are tested pull-ups on the shaft. 33 respondents (41.25%) are within the central value (9-11 pull-ups) Seven respondents are weaker than median zone (7-9 pull-ups). A good part of respondents perform the motoric task with 13-16 pull-ups. It can be said that due to the conclusion that this motoric task is difficult for respondents, which can be seen by the span (7-16 pull-ups), which suggests that they need to be attended a greater training to strengthen the hands and shoulder belt. This motor task belongs to harder motoric capabilities that characterize durability.

Of the respondents 37 (46.25%) are in the area of central value with a time of 14.3 - 15.3 min. 28 respondents achieved lower results than the central value in a time of 16.3 - 19.3. Better times achieved 15 respondents with times 11.3 - 13.3 min. Although this motoric task is difficult it can be said that the majority of respondents are in solid durability. Most of the members of the unit are in more morphological construction, dedicated more attention to excessive muscle construction, which has a negative impact on motoric ability durability, ie running of great intensity, which includes running of 3000 meters. The variable points actually represents a measuring scale for achieved results of the respondents, which evaluates achieved results of respondents. By them 22 respondents are below the level of the central value, and most of the respondents are in the space of the average value (X = 60.6). 24 respondents are below the central value, they practically get the points that met the motoric tests, but with smaller scoring record, which allows survival in the unit, because if it does not meet the criteria of motoric , then he can be transferred from this elite unit. Regression analysis where prognostic variables were 4 motor capabilities: push-ups, abdominal muscles, pull-ups and running 3,000 meters, and criterion was a points scale, it was determined a significant impact on the criteria, indicating that the criterion of a points scale is a reliable. Multivariate and univariate analysis that we wanted to determine the effects of 4 kinesthetic capabilities based on psychosomatic status of the respondents, the analysis showed no differences, which means that we talk about a sample with similar motoric capabilities.

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ODREĐIVANJE UTJECAJA I RAZLIKA U SPECIFIČNIM STRUČNIM UZORCIMA ISPITANIKA

Sažetak
U uzorku od 80 ispitanika, populacijske specijalne snage podijeljene su na tri subgupe, uzrasta: prvu skupinu od n=27 do 25 godina, druga skupina od n=28 uzrasta 26-30 godina i treća skupina od n=25 uzrasta 31- 36 godina. Provedeno je istraživanje motoričkih sposobnosti kao dio programske strukture za provedbu jedinice. U ovom istraživačkom postupku izolirane su četiri motoričke varijable: push-up, abdominalni mišići, podizanje i trčanje od 3000m. Za svaku varijablu prema broju pokušaja u testu i vremenu za trčanje 3000 metara dodijeljeni su bodovi. U istraživačkom je postupku korištena deskriptivna metoda, klasifikacija frekvencija izvedbe motorike i određivanje utjecaja kriterija na prognostičke varijable i određivanje razlika između ispitanika. Po rezultati deskriptivne statistik, možemo zaključiti da kod varijabie push-ups, sit-ups i bodovi, postoje velike razlike u testovima o čemu svjedoči visina standardne devijacije, jer pokazuju veće odstupanje od prosječne vrijednosti, a koeficijenti Varijabilnosti nam pokazuje veći postotak varijacija standardne devijacije od srednje vrijednosti. Rezultati regresijske analize pokazuju statističku značajnost, da su varijable motorike značajni prediktori kriterija, što nam govori da skala bodova bolje procjenjuje rezultate i predstavlja dobar reprezentant kriterija postignutih rezultate. Kao opći zaključak istraživanja u tri grupe ispitanika koji su podvrgnuti podskupu prema uzrastu, možemo zaključiti da među njima nema statistički značajnih razlika, a većina ispitanika je dobre tjelesne pripreme.

Ključne riječi: *motoričke sposobnosti, motorički testovi, varijable, analiza, regresija, utjecaj, razlike*

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