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THE ANALYSIS OF PHYSICAL FITNESS AND DEVELOPMENT RATES OF THE OFFICERS OF FUTURE POLICE, STATE BORDER, FIRE DEPARTMENT AND RESCUE SERVICES

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Annotation. The professional physical training is especially relevant to the future statutory officers and its purpose of exercise is to help to form the psychophysical features and qualities of an individual which correspond to the requirements of profession. The objective of this work is to investigate the rates of health, physical fitness and development of future statutory officers by using Eurofit testing programme. The participants of the research are the students who study "Fire safety" and "Safety engineering" in the Faculty of Public Security (FPS) of Mykolas Romeris University (MRU) and the Faculty of Civil Engineering (FCI) of Vilnius Gediminas Technical University (VGTU). Eurofit tests were used to evaluate the physical fitness of school children and students, they were applied to judge on quickness (running in the 100 metres), common stamina (running in the 3000 metres), sudden foot force (standing long jump), hand power endurance (pull–ups), stomach muscle force endurance (sit down and lie down), balance (flamingo), speed of upper limbs motion (tapping), static force (hand grip) etc. It was determined that the speed rates of the examined students of VGTU and MRU surely statistically didn't differ ($p>0,05$), they balanced within the pale of 13,50-13,75 seconds. The students of MRU achieved the best rates of common stamina of running in the 3000 metres in the first research ($\bar{x}$ = 13:12 min). The rates between testing of sudden foot force of MRU individuals were surely statistically on the decrease ($p<0,01$) and during the first testing the average of their achieved results amounted to 264,95 cm. The average value of the rates of hand power endurance numbered 14 pull-ups by examining the groups of students from the university. The rates between testing of stomach muscle endurance of all team boys increased and the students of VGTU achieved the highest results ($\bar{x}$ = 29,77 times/30 s). According to the test of the speed of upper limbs, the future officers of MRU achieved the best result ($\bar{x}$ = 9,96 s) during the second research and it was evaluated as "very good". The rates of tests ("hand static force", "hand relative force", "balance" and "sudden foot force") of future statutory officers who had participated in the research were considerably higher than the average results of Lithuanian students who had been examined before.

Keywords: physical fitness, physical development, balance, flexibility, agility, explosive power, testing, evaluation.

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INTRODUCTION

Physical features and movement abilities of a human develop naturally in a lifetime. The man‘s physical culture shows in his work results such as knowledge, the level of physical qualities and movement abilities[1]. The review of literature and practical experience represent that the development of students’ physical qualification should be predicated on the conception of training. For the meantime, it is the most active and scientifically based means of the increase of human physical fitness. Such features as stamina, strength, quickness, flexibility, high functional fitness of an organism might be gained by the purposefully balanced process of training.

A lot of scientists had proved that those psychophysical forces of an individual which are significant for the future career could be developed and improved effectively by the means of physical culture. Therefore, the professional physical training is especially relevant to the future statutory officers and its purpose of exercise is to help to form the psychophysical features and qualities of an individual which correspond to the requirements of profession[2].

The state of health and physical fitness of Lithuanian students of higher education has been researched by many authors for a long time[3,4,5,6,7,8,9,10,11,12].

The results of accomplished tests are closely related to the health of young people, its retention and problems of consolidation which are determined by stated attitude towards one’s

[1] Tamošauskas, P., Morkūnienė,V.,Višinskienė D. *Studentų kūno kultūra: teorija ir praktika*. Vilnius: Technika, 2008.
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[4] Bruzgis, R. Studentų fizinis lavinimas. Vilnius. 1990.
[5] Ivaškienė, V. ir kt. LŽŪU ir LVA studentų fizinis pajėgumas. *Kultūra – Ugdymas – Visuomenė; LŽŪU mokslo darbai.* 2003, 1:233-240.
[6] Ivaškienė, V. ir kt. Lietuvos studenčių fizinio išsivystymo analizė, *Kultūra – Ugdymas -Visuomenė: LŽŪU mokslo darbai.* 2005, 1: 334-336.
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[11] Veršinskas, R., Gaška, V. Statutinių pareigūnų fizinis rengimas. *Visuomenės saugumas ir viešoji tvarka*. 2007, 1:107-117.
[12] Tamošauskas, P., ir kt. Vilniaus Gedimino technikos ir Mykolo Romerio universitetų studenčių fizinio aktyvumo vertinimas 2010-2012 m. *Santalka: Filologija, edukologija*. 2013. 21(2):142-153.

health, the lack of healthy lifestyle skills or decreased motivation to use the means of physical culture to strengthen one's health[13,14,15,16].

More than 10 years have passed since the results of Lithuanian students' fitness were announced in the publication (Volbekienė V., 2003) by using Eurofit tests. Some of the authors suppose that the evaluation criteria which have been recommended to the students may not satisfy the state and physical fitness of present students considering the tendency of youth acceleration[17]. Therefore, some of the authors[18,19] currently evaluate the rates of physical fitness in their works by using the scales of evaluation which are given in the publication "The methodology of measurement of physical fitness and state of Lithuania's citizens"[20].

During their practice classes both future police and state border protection officers, and fire protection and rescue service officers improve their physical power, motor faculties and form different abilities of motions which are necessary for the future career. The accomplished researches have shown that various sports' practice differently influences the rates of functional, physical fitness and psychophysical functions which are necessary to improve the particular professional work. Various authors[21,22,23,24] offer to solve the complex goal of physical preparation by going in for different sports such as:

– acrobatics and gymnastics by improving coordination of movement;

– running, skating, cycling and skiing by training the speed of cyclic motions and stamina;

[13] Tamošauskas, P., ir kt. *Studentų fizinio ugdymo teorijos ir metodikos pagrindai*. Vilnius: Technika, 2003.
[14] Šiupšinskas, L. Kompleksinis studentų fizinio aktyvumo vertinimas fizinės sveikatos, fizinio pajėgumo ir kūno masės kompozicijos rodikliais. Daktaro disertacija. Kaunas: KMU, 2006.
[15] Tamošauskas, P., ir kt. Supra note 12, p.142-153.
[16] Коновалова, И.А., Кузмин, А. М. Моделирование процесса становления культуры здоровья будущих педагогов по физкультуре. *Теория и практика физической культуры*. 2011, 2: 10-13.
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[19] Tamošauskas, P., ir kt., op.cit., p. 144-151.
[20] Muliarčikas, A. ir kt. *Lietuvos gyventojų fizinio pajėgumo testavimo ir fizinės būklės nustatymo metodika*. Vilnius: LSIC, 2007.
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[22] Tamošauskas, P., ir kt. *Studentų fizinio ugdymo teorijos ir metodikos pagrindai*. Vilnius: Technika, 2003.
[23] Tamošauskas, P., ir kt., op.cit., p. 144-151.
[24] Коновалова, И.А., Кузмин, А. М. Моделирование процесса становления культуры здоровья будущих педагогов по физкультуре. *Теория и практика физической культуры*. 2011, 2: 10-13.

– weightlifting, the throw of a hammer, discus and javelin, shot-put, long jump and high jump by forming strength;

– sports and games, boxing, karate, wrestling etc. can be recommended to improve the coordination of motions when there is contact with an opponent.

The rates of physical fitness and development of future statutory officers, who are the students of Faculty of Public Security (FPS) in Mykolas Romeris University (MRU) and Faculty of Creative Industries (FCI) in Vilnius Gediminas Technical University (VGTU), have been evaluated and compared in this article.

The peculiarity of our research is the physical activity of future statutory officers which has been evaluated by comparing physical qualities, development and physiological rates but not under the standards of physical qualification which are used to evaluate the officers of police, fire safety and rescue service and state border protection service.

The aim of this work is to investigate the rates of physical fitness and development of future statutory officers using Eurofit testing programme.

In order to implement the aim, the goals have been raised such as:

– to evaluate physical development and physiological rates which describe MRU (FPS) and VGTU (FCI) students' health;

– to analyse the components of physical fitness of the participants;

– to compare the level of physical preparation of future statutory officers with the data of research of other contemporaries of higher educational institutions.

The objectives of research are the rates which describe students' health, physical fitness and development.

ORGANIZATION AND METHODOLOGY OF THE RESEARCH

The research was done in the autumn terms of 2011-2012 and 2012-2013. The contingent of respondents constituted 80 (about 40 students every year) boys from MRU FPS and 80 boys from VGTU FCI who were studying "Fire safety" and "Safety engineering".

Students' physical development and fitness and physiological rates were determined during the research. The Eurofit tests were used to evaluate physical fitness such as "flamingo", "tapping", "sit down and lie down", "sit down and reach", "10 x 5 m shuttle

run", "standing long jump", "hang with bent arms", "hand grip", "hand relative force"[25,26,27] and running in the 100 metres and 3 kilometres.

The dynamometer "DK-100" was used in order to measure hand static force. A participant pressed the dynamometer with all one's strength by standing and holding it in one's hand. The power of left and right hand was measured.

The features such as "height", "weight", "body mass index (BMI)", "living capacity of lungs (LCL)", "LCL and weight proportion" [28 , 29] were evaluated in order to set the physiological and physical development rates which describe students' health.

We measured the highest volume of air which could be exhaled by breathing in as much as possible during the LCL testing. We used the portable spirometer "MS04 MicroPlus" to reach a goal.

The analysis of the data had been done by using the 19th version of SPSS programme[30]. The statistical rates were calculated such as arithmetic averages, their errors, standard deviation (SD) and significance of mean difference of dependent and independent samples according to the Student's criteria (t). The values of physical fitness and development were rated by using evaluation scales most often referred to literature[31,32].

THE RESULTS OF RESEARCH AND THEIR ANALYSIS

The rates and their differences which define MRU and VGTU students' health are given in the tables 1, 2.

The analysis of participants' physical development rates revealed that MRU male students who took part in the first testing were higher than others since the average height was 185,0 (5,60) cm in the autumn term of 2011-2012. The average height of participants (table 2) diverged significantly ($p<0,05$) between MRU students who participated in the first and second testing and VGTU students who took part in the first one.

[25] Apanasenko, G. L. Posibility for the quantitative, *Gig Sanit,* 1986, (6): 8-55.
[26] Astrauskienė, A. ir kt. KTU ir KMU pirmo kurso studenčių požiūris į sveikatą kaip gyvenimiškąją vertybę. *Kultūra – Ugdymas – Visuomenė: LŽŪU mokslo darbai,* 2005, 1: 315-317.
[27] Poderys, J. *Kineziologijos pagrindai: mokomoji knyga.* Kaunas: KMU, 2004.
[28] Bruzgis, R. *Supra note 4.*
[29] Ivaškienė, V. ir kt., *Supra note 5*, p. 233-240.
[30] Pukėnas, K. *Kobinių duomenų analizė SPSS programa: studijų knyga.* Kaunas: LKKA, 2011.
[31] Muliarčikas, A. ir kt., Supra note 20, p. 7-71.
[32] Volbekienė, V. Eurofitas. Vilnius: Mintis, 2003.

It was out that MRU and VGTU boys were much about the same weight by analysing the weight rates of participants (table 1). Only the university students of technical profile were distinguished for their total weight rates during the second testing whose rate of 77,71 kg was credibly lower ($p<0,05$) than MRU students' in the second testing.

The living capacity of students' lungs was determined on purpose to evaluate the status of respiratory system. The results of research (table 1) showed that the LCL average of all participants (5, 7-5,9 l.) had been evaluated as "good" except MRU students who participated in the second testing. In order to analyse LCL rates, statistically significant differences ($p<0,01$) were observed between groups of participants and testing. The credible differences of the rate were undetermined between the students of VGTU and other higher educational institutions during the first and second researches. "LCL and weight proportion" of all participant groups, who participated in testing, was evaluated as "good". It is necessary to mention that the reduction of the rate value of MRU students ($p<0,05$) was noticed between tests (tables 1 and 2). The importance of the parameter of FPS boys, which had been estimated during the second research, was statistically less ($p<0,05$) compared with other participant groups.

Table 1. Physical development and physiological rates which describe students' health

Rates / UNIVERSITY	Height, cm	Weight, kg	Living capacity of lungs, (LCL) litres	LCL (ml) and weight balance (kg)	BMI (kg/m^2)
MRU (PSF) 2011-2012 (academic year) average (SD)	185,0 (5,60)	79,70 (7,80)	5,95 (0,77)	74,60 (2,20)	23,70 (2,14)
MRU (FPS) 2012-2013 (academic year) average (SD)	182,45 (4,60)	80,70 (6,40)	5,11 (0,26)	71,12 (1,47)	24,14 (1,55)
VGTU (SF) 2011-2012 (academic year) average (SD)	182,33 (4,80)	77,71 (6,20)	5,74 (0,28)	73,80 (2,10)	22,22 (1,06)
VGTU (SF) 2011-2013 (academic year) average (SD)	183,44 (6,80)	78,88 (11,0)	5,81 (0,5)	74,40 (4,01)	22,81 (2,27)

SD – standard deviation

The credible differences were not noticed between the results of the first and second testing of the students of the same university on purpose to analyse participants' body mass index values and their alternation (tables 1 and 2).

According to the recommendations of World Health Organization, the future statutory officers' BMI was defined as "within the pale of normal body weight". The highest average of BMI indicator of 24,14 (1,55) kg/m^2 was stated between MRU students during the second testing. The BMI value of different tests statistically credibly differed ($p<0,01$) between FPS and FCI participants. The repartition of MRU and VGTU students' number according to BMI norms signified that the biggest part of participants (82,4%; $p<0,001$) were of normal weight (figure 1), just 13,6% of boys had overweight and 4% of them had average obesity.

The rates of physical fitness, their alternation and differences of MRU and VGTU students have been given in tables 3 and 4.

In proportion to physical fitness rates, it has been determined that the results of our participants from Public Safety Faculty were higher than the participants had who were examined in 2003[33] by V. Vobelniene. However, the average physical fitness of VGTU boys has been similar to contemporaries from other Lithuanian higher educational institutions. Physical fitness components of most MRU students have been evaluated as "very good" and VGTU students have been rated as "good" in accordance with "Methodology of physical fitness evaluation of Lithuanian people".

The cumulative fitness data showed that the average of the flamingo test's results of our participant students was evaluated as "very good" (tables 3, 4). Although the balance test's results of the first and second researches of MRU boys were compared, the rates' alterations were not statistically significant.

The difference of averages of this parameter ($p<0,01$) was determined as statistically credible between participants from different universities and VGTU students by comparing the results of the first and second researches ($p<0,01$) (table 2).

The value of this rate has been decreasing significantly ($p<0,01$) between MRU groups and VGTU students of the first and second testing ($p<0,05$) by evaluating the results of boys "tapping" test which reflects the speed of motion of upper limbs. The difference ($p<0,05$ - $p<0,01$) of this rate's averages between contemporaries from different universities was identified as statistically credible too (tables 3, 4). The evaluation of "tapping" test of the

[33] Volbekienė, V., *Supra note 32.*

second research allows to state that the speed of upper limbs of FPS and FCI students is "good".

Table 2. Reliability (p) of difference of students' physical development and physiological rates

Rates / UNIVERSITY	Height, cm	Weight, kg	Living capacity of lungs, (LCL) litres	LCL (ml) and weight balance (kg)	BMI (kg/m^2)
MRU 2011-2012 a. y. MRU 2012-2013 a. y.	p<0,05	p>0,05	p<0,01	p<0,05	p>0,05
VGTU 2011-2012 a. y. VGTU 2012-2013 a. y.	p>0,05	p>0,05	p>0,05	p>0,05	p>0,05
MRU 2011-2012 a. y. VGTU 2011-2012 a. y.	p<0,05	p>0,05	p>0,05	p>0,05	p<0,01
MRU 2011-2012 a. y. VGTU 2012-2013 a. y.	p>0,05	p>0,05	p>0,05	p>0,05	p>0,05
MRU 2012-2013 a. y. VGTU 2011-2012 a. y.	p>0,05	p<0,05	p<0,01	p<0,01	p<0,01
MRU 2012-2013 a. y. VGTU 2012-2013 a. y.	p>0,05	p>0,05	p<0,01	p<0,01	p<0,01

The test of "sit down and reach" describes the waist flexibility. The credible differences of flexibility were not determined between the students of the same higher educational institution during the first and second researches. The results of this test differed statistically credibly (p<0,05) between contemporaries from different universities (table 4).

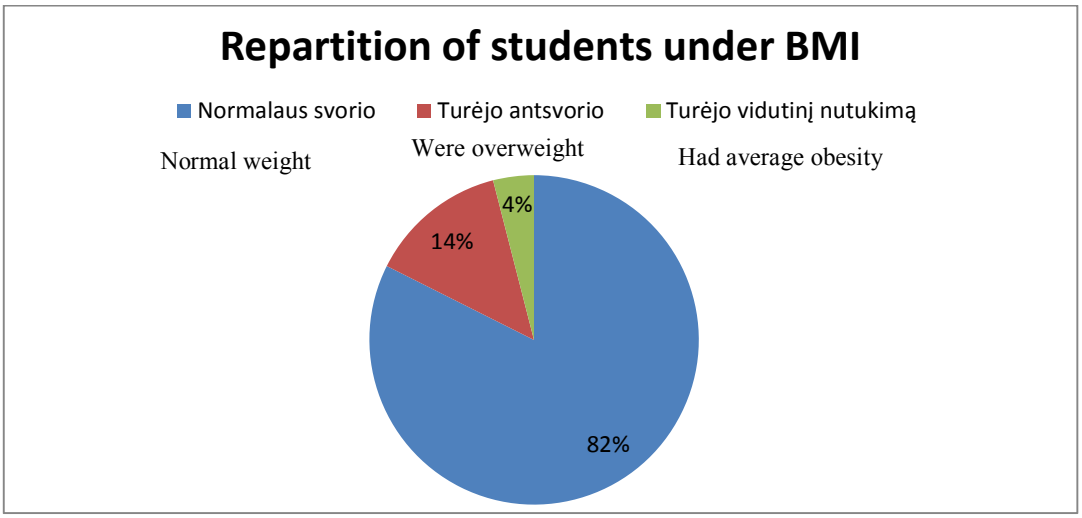

Figure 1. Repartition of future statutory officers under BMI

The best result of this test $\bar{x}$= 38,05 (6,20) cm was achieved by VGTU students in the year 2012-2013, it was evaluated as "very good".

The test of "sit down and lie down" (per 30 seconds) reflects the endurance of stomach muscles' dynamic force.

Table 3. Rates of students' physical fitness

Rates / UNIVERSITY	MRU (FPS) 2011-2012 average (SD)	MRU (FPS) 2012-2013 average (SD)	VGTU (SF) 2011-2012 average (SD)	VGTU (SF) 2011-2013 average (SD)
Flamingo test, time/30 s.	1,80 (0,91)	1,82 (1,0)	1,08 (1,0)	2,97 (0,98)
Tapping, s.	12,90 (1,26)	9,96 (0,90)	10,81 (2,48)	10,15 (1,04)
"Sit down and reach", cm	35,30 (5,20)	35,65 (3,80)	37,52 (5,80)	38,05 (6,20)
"Sit down and lie down", time/30 s.	26,20 (2,2)	28,17 (3,20)	25,20 (1,80)	29,77 (3,0)
Hang, s.	60,0 (17,0)	61,54 (12,40)	66,19 (11,20)	60,94 (9,0)
10 x 5 m shuttle run, s.	17,30 (0,98)	17,25 (1,52)	17,67 (1,02)	18,40 (1,10)
Standing long jump, cm.	264,95 (8,40)	257,48 (11,0)	239,55 (10,20)	238,80 (19,60)
Pull-up, time.	13,20 (3,00)	14,0 (6,0)	12,42 (3,40)	11,0 (3,20)
Running in the 100 m, s.	13,68 (0,78)	13,75 (0,64)	13,50 (0,46)	13,64 (0,94)
Running in the 3000 m, min.	13:12 (0,77)	13:13 (1,15)	13:30 (1,0)	13:53 (1,06)
Hand grip, kg: a) left hand b) right hand	 52,40 (4,80) 57,30 (6,60)	 54,40 (3,60) 60,05(6,0)	 48,55 (7,0) 52,80 (7,20)	 53,71 (7,80) 58,05 (8,20)
Hand relative force, kg.	74,10 (9,80)	78,31 (8,02)	65,95 (9,39)	72,43 (8,80)

SD – standard deviation

It emerged that the parameters of this test credibly ($p<0,05$) differed between participant students from different higher educational institutions. The rates' averages ($p<0,01$) of the first and second research of students from the same university differed significantly. The upturn of the results of this test was observed between testing.

The test of "hang with bent arms" is intended to determine the muscle force stamina of the bend of arms and shoulders. According to the value of the alternation of averages of this test's data, the reduction of VGTU students' results was statistically credible ($p<0,05$) (tables 3, 4). The participants of VGTU achieved the best result of the test "hang with bent arm" (66,19 (11,20) seconds) during the first testing. The results of other groups' testing were comparatively similar.

The purpose of the test of "pull-ups" is to evaluate the endurance of the force of arm protractor, chest and front palmar muscle. The best result of the test of "pull-ups" (14,0 (6,0) times as large) was achieved by FPS students during the second research. The registered results of MRU students during the second testing differed significantly reliably as compared with the results ($p<0,01$) of VGTU groups.

The test of "10 x 5 m shuttle run" describes the ability of an individual to do quick and exact motions, i.e. agility as a physical feature. According to the testing results of VGTU boys, the deterioration of rates' averages ($p<0,01$) was determined as statistically credible, whereas the averages of testing rates of MRU boys hardly changed.

The fundamental statistically credible differences ($p<0,01$) between participant groups during the second testing were defined according to the analysis of the results of FPS and FCI students. The results of the first MRU research and the second VGTU testing ($p<0,01$) differed too. The test's results of both participant groups are evaluated as "good".

The purpose of the test of "standing long jump" is to evaluate sudden foot force. The evident decline of rates' averages ($p<0,01$) between MRU students was observed agreeably to the results of this test. The distinct difference of rates' averages ($p<0,01$) between FPS and FCI contemporaries was also noticed during the time of particular testing (table 3).

The purpose of the test of running in the 100 m is to evaluate complex speed ability (more speed endurance). The data of the test did not show statistically credible differences between participant groups and testing. The speed ability rates of the students from higher educational institutions were similar.

The test of running in the 3000 m describes common endurance. The test's results of VGTU students had a tendency to decline ($p<0,01$) during the research. The credible difference ($p<0,01$) of this test's rates was shown up between the results of the first MRU and second VGTU testing, and also between the results of the second MRU and VGTU testing. The best results of running in the 3000 m were achieved by MRU participants during the first testing while VGTU participant students measured up to the worst results during the second research.

The rates of students' static force were evaluated according to the rate of hand grip. The static force rates of right and left hand of MRU students were better ($p<0,001$) than they were of their contemporaries from VGTU.

Table 4. Reliability (p) of difference of students' physical development and physiological rates

Rates / UNIVERSITY	MRU 2011-2012 2012-2013	VGTU 2011-2012 2012-2013	MRU 2011-2012 VGTU 2011-2012	MRU 2011-2012 VGTU 2012-2013	MRU 2012-2013 VGTU 2011-2012	MRU 2012-2013 VGTU 2012-2013
Flamingo test, time/30 s.	p>0,05	p<0,001	p<0,01	p<0,01	p<0,01	p<0,01
Tapping, s.	p<0,01	p<0,05	p<0,01	p<0,001	p<0,05	p>0,05
"Sit down and reach", cm	p>0,05	p>0,05	p>0,05	p<0,05	p>0,05	p<0,05
"Sit down and lie down", time/30 s.	p<0,01	p<0,001	p<0,05	p<0,01	p<0,01	p<0,05
Hang, s.	p>0,05	p<0,05	p<0,01	p>0,05	p>0,05	p>0,05
10 x 5 m shuttle run, s.	p>0,05	p<0,01	p>0,05	p<0,01	p>0,05	p<0,01
Standing long jump, cm.	p<0,01	p>0,05	p<0,001	p<0,01	p<0,01	p<0,01
Pull-up, time.	p>0,05	p>0,05	p>0,05	p>0,05	p<0,05	p<0,01
100 m run, s.	p>0,05	p>0,05	p>0,05	p>0,05	p>0,05	p>0,05
3000 m run, min.	p>0,05	p<0,01	p>0,05	p<0,01	p>0,05	p<0,01
Hand grip, kg:						
a) left hand	p<0,05	p<0,001	p<0,001	p>0,05	p<0,001	p>0,05
b) right hand	p<0,01	p<0,001	p<0,001	p>0,05	p<0,001	p>0,05
Hand relative force, kg	p<0,001	p<0,001	p<0,001	p<0,1	p<0,001	p<0,001

The right hand's force rates of both student groups were higher than their left hand's. The most average of hand static force rate such as 60,05 kg was recorded in the year 2012 – 2013 between MRU participants during the second testing. The result of the second testing of FPS students' group was evaluated as "very good", and the results of the first FPS and the first and second FCI research were evaluated as "good". On purpose to evaluate hand static force precisely, this force was evaluated in consideration of body weight, i.e. hand relative force. The value of this rate of VGTU boys during the first and second testing was evaluated as "sufficient" and "good", and the value of MRU boys was rated as "good" and "very good" and it was rather higher ($p<0,01$) than their contemporaries of VGTU had achieved (tables 3, 4). The results of the research showed significant, statically credible differences between participant groups ($p<0,01$) and testing ($p<0,01$).

CONSIDERATION OF THE RESULTS

According to the analysis of physical development rates, it was defined that height rate averages of MRU and VGTU students basically did not differ from the published data by other authors[34,35]. The exception was just the students from MRU who participated in the first testing, who were quite higher than the students' from other higher educational institutions of Lithuania.

Agreeably to statistics, the participants' weight did not differ from the data of other authors[36,37] who had researched the students from VMU, KTU, ASU and KU, only the weight of MRU students who participated in the second testing was different since their weight rates' average was slightly bigger. No publication was found in special literature which had analysed the BMI values of boys who studied in various universities in Lithuania. The results of the research revealed that future statutory officers' motional abilities such as the rates of flexibility, agility, common stamina, speed endurance, arm protractor, chest and front palmar muscle force endurance did not change statistically, however, the results of endurance of stomach muscle dynamic force, left and right hand static force, hand relative force became statistically credibly better during the research. The rates of our exploratory tests ("flamingo", "10 x 5 m shuttle run", "hang", "standing long jump", "pull-ups", "hand grip with a left and right arm") were considerably higher on purpose to compare the testing results of MRU and VGTU physical power with the research results[38,39,40,41,42] of the boys from other higher educational institutions. The results of VGTU students' flexibility were not worse than KU students' but they were higher as compared with contemporaries from KTU, ASU, LUHS. The rates of this test of MRU students did not differ from the average results of Lithuanian students. The test's results of endurance of stomach muscle dynamic force of MRU and VGTU participants did not differ from KU, ŠU, KTU contemporaries but they were higher

[34] Volbekienė, V. *Supra note* 31.
[35] Dadelo, S., *Supra note 17*, p.43-49.
[36] Minkevičius, R., ir kt., *Supra note 9*, p.366-370.
[37] Šapokienė, L., ir kt. KTU pirmo kurso studentų fizinio rengimo ir sveikatos stiprinimo programų efektyvumas. *Kultūra – Ugdymas – Visuomenė: LŽŪU mokslo darbai*. 2007, 2: 233-236.
[38] Šapokienė, L., ir kt., *op. cit.,* p. 233-236.
[39] Grabauskas, A. ir kt. ŠU studentų fizinio pajėgumo kaita. *Kultūra – ugdymas – visuomenė: LŽŪU mokslo darbai* 2005, 1:348-350.
[40] Ivaškienė, V. ir kt. *Supra note 5*, p.233-240.
[41] Minkevičius, R., ir kt., *op. cit.,* p.366-370.
[42] Vaščila, V., ir kt. Kūno kultūros pratybų veiksmingumas pirmo kurso studentų požiūriu į kūno kultūrą. *Kultūra – Ugdymas – Visuomenė. Tarptautinės mokslinės konferencijos straipsnių rinkinys.* Akademija, 2005. p. 385 – 387.

than ASU students'. The obtained data of FPS and FCI students' physical features allows to state that most test results of future statutory officers were rather higher as compared with the appropriate data of students from other higher educational institutions in Lithuania which had been introduced by different authors. All things considered, it could be stated that MRU FPS students' physical fitness is significantly influenced by such factors as the selection of entrants, versatile health test and compulsory practice of engineering professional physical fitness in the second and third courses, training of optional subject "Physical fitness" (according to the chosen sports) in the first course, motivation of high level physical fitness and purposeful, independent training of physical power. It seems likely that it is the main reason which determined the differences of some testing results between VGTU and MRU students.

RECOMMENDATIONS

1. The results of this research have to be introduced to MRU FPS and VGTU FCI lecturers on purpose to apply the results during the practical training.
2. The lecturers of higher education institutions should constantly adjust the content of physical culture, consider the testing results of pupils' physical features and pay particular attention to those components of physical fitness which rates are lower than the average results of the national higher educational institutions.
3. Depending on the individual data of students, it is necessary to choose exercises for training from various sports which effectively develop various abilities and physical power since occupations of various sports differently affect psychophysical and psychophysiological functions of a human, which are required for the particular career.

CONCLUSIONS

1. According to the results of research, it was determined:

- The rates of MRU and VGTU boys' height and weight were the same, except the results of those parameters of the first testing of MRU students;
- The best part of participants (82,4%) had normal body weight, 13,6% were overweight and 4% had average obesity;

- The average of LCL and weight proportion rates of students from both universities ranged from 71,12 to 74,6 and it was evaluated as "good".

2. The state of physical fitness of future statutory officers significantly differed during the performed researches in different academic years:

- The rates of MRU students' fitness such as upper limbs' motion speed, endurance of stomach muscle dynamic force, right and left hand static force and hand relative force credibly got better and similarly the rates of VGTU students' fitness such as endurance of stomach muscle dynamic force, agility, common stamina, right and left hand static forces and hand relative force statistically improved during testing. Changes of other rates of MRU (flexibility, muscle force stamina of the bend of arms and shoulders, endurance of the force of arm protractor, chest and front palmar muscle, agility, quickness ability, common endurance) and VGTU (flexibility, endurance of the force of arm protractor, chest and front palmar muscle, sudden foot force, quickness ability) students were trivial;

- The results of MRU students' sudden foot force and VGTU students' balance, endurance of the force of arm protractor and chest and front palmar muscle declined statistically credibly;

- It was defined that the rates of those tests such as "flamingo", "tapping", "pull-ups", "long jump", "hand static force", "hand relative force" were higher as compared MRU boys' physical fitness with the results of VGTU students of the same age.

3. The collected data showed:

The results of future officers' tests such as "flamingo", "10 x 5 m shuttle run", "hang", "long jump", "pull-ups", "hand grip" and "hand relative force" were considerably higher than the data of students from other higher educational institutions in Lithuania.

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BŪSIMŲJŲ POLICIJOS, VALSTYBĖS SIENOS APSAUGOS, PRIEŠGAISRINĖS APSAUGOS IR GELBĖJIMO TARNYBOS PAREIGŪNŲ FIZINIO PAJĖGUMO IR IŠSIVYSTYMO RODIKLIŲ ANALIZĖ

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S a n t r a u k a

Būsimiems statutiniams pareigūnams ypač aktualus yra profesinis – taikomasis fizinis rengimas, kurio pratimų paskirtis – padėti suformuoti ir išugdyti profesijos reikalavimus atitinkančias psichofizines ir asmenybės ypatybes bei savybes. Tyrimo tikslas – naudojant Eurofit`o testų programą ištirti būsimųjų statutinių pareigūnų sveikatos, fizinio pajėgumo ir išsivystymo rodiklius. Tyrimio dalyviai MRU viešojo saugumo fakulteto studentai ir VGTU statybos fakulteto studentai studijuojantys studijų programas "Gaisrinė sauga" bei "Saugos inžinerija". Fiziniam pajėgumui įvertinti naudoti tokie testai: greitumui – 100 m bėgimas, bendrai ištvermei – 3000 m bėgimas, kojų staigiajai jėgai – šuolis į tolį iš vietos, rankų jėgos ištvermei – prisitraukimai prie skersinio, pilvo raumenų jėgos ištvermei – sėstis ir gultis, pusiausvyrai – flamingo, viršutinių galūnių judesio greičiui – tepingas ir kiti. Nustatyta, kad VGTU ir MRU studentų greitumo rodikliai statistiškai patikimai nesiskyrė, svyravo 13,50-13,75 s. ribose. Geriausius bendrosios ištvermės 3000 m rodiklius pasiekė MRU atstovai - pirmojo tyrimo metu (13:12 min.). MRU tiriamųjų kojų staigiosios rodikliai tarp testavimų statistiškai patikimai mažėjo, o jų pasiektas geriausias rezultatas pirmojo testavimo metu siekė – 264,95 cm. Tirtųjų student rankų jėgos ištvermės rodikliai siekė – 14 prisitraukimų. Vaikinų pilvo raumenų ištvermės rodikliai tarp tyrimų didėjo ir aukščiausią šio testo rezultatą – 29,77 k/30 s. pasiekė VGTU studentai. Testuojant viršutinių galūnių greitį geriausią rezultatą – 9,96 s. pasiekė MRU būsimieji pareigūnai antrojo tyrimo metu ir jis vertinamas kaip "labai geras". Tirtų būsimųjų statutinių pareigūnų "plaštakos statinės jėgos", "santykinės plaštakos jėgos", "pusiausvyros", "staigiosios kojų jėgos" testų rodikliai buvo žymiai aukštesni nei Lietuvos studentų vidutiniai rezultatai.

Pagrindinės sąvokos: fizinis pajėgumas, fizinis išsivystymas, pusiausvyra, lankstumas, vikrumas, staigioji jėga, testavimas, vertinimas.

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