Law institute cadets' physical and health progress analysis

UDC 796.011.1

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Abstract

Objective of the study was to analyze the law institute cadets' physical and health progress for the academic study period.

Methods and structure of the study. The study was run in 2016-2021 to cover the whole academic study period. We sampled the cadets of Putilin Belgorod Law Institute of the Ministry of Internal Affairs (n=82, including 35 females and 57 males). Health of the sample was rated by the G.L. Apanasenko Health Test set (1988), with the test data supported by the morbidity statistics reported by the academic Medical and Sanitary Service. Physical fitness of the sample was rated by the 10x10m shuttle sprint, 1km race, pull-ups (males) and 1-min sit-ups (females) tests.

Results and discussion. The study found the cadet's health varying in a wavelike manner for the study period, with growths in the strength indices and cardio-respiratory system functionality rates. The formal morbidity-related absenteeism statistics demonstrate virtually double progress for the study period. The physical fitness tests showed physical progress of the sample for the period that may be interpreted as indicative of the regular physical education service being beneficial for the cadets. The academic health, morbidity and physical fitness test and progress analyzing system was found important for the academic physical education service design and management purposes.

Keywords: *cadets, health, working capacity, physical education, physical training, education.*

Background. Training service provided by the educational system of the Ministry of Internal Affairs is diverse and challenging in many aspects to train a versatile specialist with profound knowledge of law, excellent physical fitness, tactical skills in criminality control domain, high mastery in using the service weapons and good physical and mental health standards for high performance throughout the whole professional career. The law enforcement personnel training system gives a special priority to the Physical Education discipline with a wide range of methods and tools to secure high physical fitness and mental performance in the training process and professional service [2, 3]. The Physical Education service is geared to shape up the key professional qualities and skills with the well-trained responses to professional situations and challenges, fast decision-making abilities and high mental and physical stress tolerance [1, 5]. Individual progress of every cadet in the Physical Education service is tested by efficient physical fitness / health tests with academic morbidity analyses.

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Table 1. *Health test data analysis: female group*

Year	Data	Kettle index	Points	Strength index	Points	Vital index	Points	Robinson index	Points	Post-20 -squats recovery time	Points	Total points	Health rate
1	Mean	20,95	0,14	48,92	0,71	45,62	0,43	76,21	3,00	1,50	3,00	7,29	Good
	Error	2,17	0,38	9,77	1,38	8,42	1,40	2,08	0,00	0,00	0,00	1,80	
2	Mean	21,42	0,14	44,99	-0,14	47,21	0,71	77,63	3,00	1,50	3,00	6,71	Satisfactory
	Error	2,19	0,38	4,58	0,38	11,60	1,70	2,45	0,00	0,00	0,00	1,80	
3	Mean	20,16	-0,25	53,49	1,25	40,25	0,29	68,75	2,14	1,30	3,00	6,13	Satisfactory
	Error	1,86	0,46	10,05	1,58	17,23	1,11	29,84	2,67	0,00	0,00	3,48	
4	Mean	20,39	-0,14	49,94	0,43	46,05	0,71	79,20	3,00	1,50	3,00	7,00	Good
	Error	2,19	0,69	11,14	1,62	4,19	0,95	0,00	0,00	0,00	0,00	1,63	

sample was rated by the G.L. Apanasenko Health Test set (1988), with the test data supported by the morbidity statistics reported by the academic Medical and Sanitary Service. Physical fitness of the sample was rated by the 10x10m shuttle sprint, 1km race, pull-ups (males) and 1-min body bending (females) tests.

Results and discussion. The morbidity-related absenteeism data analyses found the highest morbidity rates in the beginner training period – that may be due to the natural transitional challenges faced by the former schoolchildren entering the university. Given on Figure 1 hereunder is the morbidity-related absenteeism statistics reported by the academic Medical and Sanitary Service. Note that the morbidity sharply falls since the third year, with the senior cadets falling sick twice as seldom as the first-year ones.

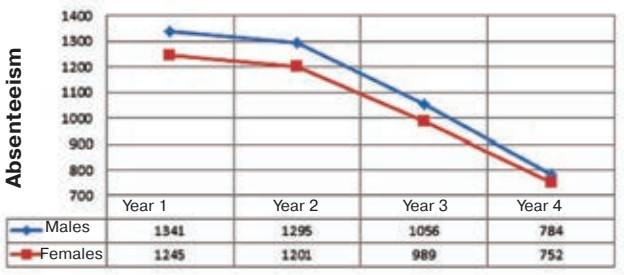

Figure 1. *Morbidity-related absenteeism statistics*

The gender difference in morbidity/ absenteeism statistics may be due to the shorter number of females in the sample. Given in Tables 1 and 2 is the detailed analysis of the gender-specific health test data.

Table 2. *Health test data analysis: male group*

Year	Data	Kettle index	Points	Strength index	Points	Vital index	Points	Robinson index	Points	Post-20 -squats recovery time	Points	Total points	Health rate
	Mean	21,32	-0,38	63,33	0,08	57,15	1,00	83,08	3,00	1,00	5,00	8,69	Good
	Error	1,83	0,65	8,08	1,32	8,15	1,29	3,33	0,00	0,00	0,00	2,02	
2	Mean	22,35	0,00	65,59	0,57	60,96	1,07	85,20	0,43	1,00	5,00	7,07	Good
	Error	1,65	0,39	7,02	1,22	11,99	1,49	2,62	1,09	0,00	0,00	2,40	
3	Mean	23,83	0,30	60,16	0,00	57,97	1,20	84,00	3,00	1,00	5,00	9,00	Good
	Error	2,08	0,48	6,72	1,15	6,87	1,14	0,00	0,00	0,00	0,00	2,27	
4	Mean	24,38	0,22	63,82	0,00	57,78	1,11	84,00	3,00	1,00	5,00	9,50	Good
	Error	2,18	0,67	11,42	1,58	11,01	1,54	0,00	0,00	0,00	0,00	2,27	

Table 3. *Physical fitness test rates*

Test	Female group, years				Male group, years			
	1	2	3	4	1	2	3	4
10x10m shuttle sprint, s	29,88±0,2	29,69±0,3	29,02±0,2	28,98±0,24	26,25±0,26	26,52±0,24	26,31±0,2	25,67±0,3
Mean points	5±0,13	5±0,08	4,91±0,09	4,91±0,09	3,85±0,27	3,42±0,26	3,35±0,2	4,09±0,3
1km race, s	4,29±0,1	4,19±0,06	4,08±0,11	4,05±0,08	3,26±0,05	3,22±0,03	3,31±0,1	3,29±0,1
Mean points	4,36±0,27	4,42±0,15	3,85±0,25	4,18±0,23	4,08±0,24	3,83±0,24	3,73±0,2	3,6±0,27
Pull-ups/ sits, reps	31,27±1,6	32,24±2,3	36,33±0,7	36,4±1,3	16,17±1,4	14,73±1,1	14,5±0,5	16,09±0,7
Mean points	4,82±0,18	4,91±0,21	3,92±0,23	2,8±0,25	4,75±0,18	4,82±0,12	4,2±0,29	4,18±0,3

The above table demonstrates the females' health rate changing in a wavelike manner for the study period, starting from 7.29±1.80 points in year 1 and falling to 6.13±3.48 points in year 3, with some growth to 7.00±1.63 points thereafter in year 4, with account of the overall fall in the morbidity rates.

The male group was also tested with fairly good health in year 1 rated by 8.69±2.02 points wih some sag thereafter followed by another growth to 9.50±2.27 points in year 4 – mostly due to the growth in the strength indices, Robinson and Kettle indices.

A special priority in the study was given to the physical fitness tests since the law enforcement service sets high physical fitness standards for the personnel. Given in Table 3 are the physical fitness test data of the sample. It should be noted that the valid regulations regretfully require no flexibility and movement coordination tests in trainings.

The physical fitness variation analysis shows notable albeit moderate progress in absolute physical fitness rates for the study period. Note that the physical fitness scores actually fall year-to-year since the yearly physical fitness benchmarks grow, although no falls in the absolute physical fitness were found for the study period. The absolute smooth physical fitness growth for the study period may be interpreted as indicative of the regular Physical Education service being beneficial for the cadets.

Conclusion. The study found the cadet's health varying in a wavelike manner for the study period, with growth in the strength indices and cardio-respiratory system functionality rates. The formal morbidity-related absenteeism statistics demonstrate virtually double progress for the study period. The physical fitness tests showed physical progress of the sample for the period that may be interpreted as indicative of the regular Physical Education service being beneficial for the cadets. The academic health, morbidity and physical fitness test and progress analyzing system was found important for the academic Physical Education service design and management purposes.

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