

## INFLUENCE OF SPORT AND HEALTH EDUCATION ON STUDENTS' QUALITY OF LIFE IN UKRAINE

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### Key words:

- sport education,
- health education,
- physical activity,
- students life

### Abstract:

Students' physical fitness and body functional state are highly correlated with the quality of life and working capacity. The research was completed at Uzhgorod National University during 2008–2010 academic years. The health status of 4 800 male and female students of first, second and third year were examined. The participants were students from the Physical Education and Sport Department, Engineering and Technical Department, and History Department. The mean age of all the respondents was 18 years old.

Data were collected using surveys (SF-36, self-assessment of health status by V. Voitenko), anthropometry, physiological testing (blood pressure, heart rate, vital capacity of lungs, hand grip, etc). Functional state was determined with the help of Martine test, Ruf'ye test and orthostatic test, the level of physical fitness was evaluated with the help of National tests and standards of physical fitness of Ukrainian people. The level of physical fitness and body functional state positively correlate with the rate of physical activity, frequency of attendance of exercises. The students from Physical Education and Sport Department had the highest level of physical fitness and functional state, the higher resistance to stress and depression, which can be caused by significant mental activity, they were less likely to consult a physician due to illness, compared to the students from other departments. The high quality of life of students is associated with optimal physical and emotional health, good health, absence of depression, the possibility to take part in various social activities, high adaptive capability, working capacity; lack of disease, specified ratio of body weight and growth. Physical activity is the factor that directly affects all counted quality of life components.

### INTRODUCTION

The quality of life according to WHO interpretation is a perception of man himself and his place in the life according to existing culture and value system, his attitude to the content of his own lives, expectations, problems. Therefore, the quality of life is a subjective feeling, which is very close to happiness and personal well-being. The life quality of adults, elderly, children and young people which suffer from different diseases are generally researched. The quality of life of students who are almost healthy and have not any pathology are researched only in few papers (T. Morimoto et al., 2006; Masurier & Corbin, 2006; Pišot & Kropelj, 2006; P. Posadzki, Musonda, Debska, & Polczyk, 2009; A. Shibata, Oka, & Nakamura, 2007).

Students are especial social group, its axiological settings are related with studying in

higher education establishment and with the desire to receive the knowledge, that are necessary for a future profession. The high working capacity and endurance, and aspiration for professional improvement are typical for students. The students have the increased risk of health problems because of great psychoemotional and mental activity connected with learning and living conditions, formation of new social contacts etc. Repeatedly it was noted that physical education, physical activity and sport are important for improving the quality of life and health, education, increasing of financial income. However, the influence of sport and recreation on quality of life of participants of the educational process was studied only in some papers (D.W. Brown et al., 2003; T. Morimoto et al., 2006; Masurier & Corbin, 2006; T.W. Puetz, 2006).

## ORGANIZATION AND RESEARCH METHODS

The research was completed at Uzhgorod National University during 2008–2009 and 2009–2010 academic years. The health state of 4 800 male and female students of first, second and third year were examined. In some surveys took part only a students of Physical Education and Sport Department, Engineering and Technical Department, and History Department. The mean age of all the respondents was 18 years.

In study were used the following research methods: self-assessment of health status by V. Voitenko (survey by questionnaire) (V.P. Vojtenko, 1991), anthropometry (Kettle index), physiological testing (blood pressure, heart rate, vital capacity of lungs etc.). Functional state was determined with the help of Martine test, Ruf'ye test and orthostatic test (G.A. Makarova, 2003) the level of physical training was evaluated with the help of National tests and standards of physical training of Ukrainian people (Physical education: curriculum for higher educational institutions of Ukraine I-IV accreditation levels, 2003).

For life quality measurement 150 participants were recruited from Physical Education and Sport Department, Engineering and Technical Department, and History Department. All students in 2010 were invited to complete the self-administrated Medical Outcomes Study 36-Item Long Form Health Survey (SF-36). The SF-36 is a generic health status questionnaire designed to assess 8 health status domain: physical functioning (PF), role limitation due to physical (RP) or emotional problems (RE), social functioning (SF), bodily pain (BP), mental health (MH), vitality (VT) and general health perception (J.E. Ware, Snow, & Kosinski, 1993; J.E. Ware, Kosinski, & Keller, 1994). The SF36 was translated in Ukrainian and validated by Yu.I. Feshchenko et al. (Yu.I. Feshchenko, Mostovoy, & Babychuk, 2002). Each domain is scored out of 100, a higher score indicating less limitation, better functioning or less pain.

All data were analyzed using OriginPro8.1 program. The mean, standard deviation, coefficient of variation, Spearman correlation coefficient were indicated and paired-sample Wilcoxon signed rank test was made. The difference was indicated as significant at the level  $p < 0.05$ .

## RESULTS AND DISCUSSION

*Anthropometric and physiological indicators of respondents.* Education, success and work capacity of students are closely related to health and thus are caused by lifestyle (T. Morimoto et al., 2006; Masurier & Corbin, 2006; Pišot & Kropelj, 2006; P. Posadzki, Musonda, Debska, & Polczyk, 2009; A. Shibata, Oka, & Nakamura, 2007). The fitness and functional state are tightly correlated with the high life quality and important for education and student's working capacity. Thus the investigations of somatic health are necessary at comprehensive measurement of students' well-being. The high blood pressure, high body mass index and insufficient level of physical activity are among ten leading causes of mortality and morbidity in Ukraine. Thus the study of cardiovascular and respiratory systems also is important.

According to results, the mean body weight of male students was 67.3 kg, female students – 56.9 kg. 72 % of students had a normal weight, 8,4 % had the weight, which was on 10–20 % greater than ideal. The Kettle index for male students was within the normal range – 383 g/cm, for female students was lower than normal – 341 g/cm. The 72 % of students who studied at the Physical Education and Sport Department and Engineering and Technical De-

partment had the Kettle index lower than normal.

The lung vital capacity of students was low, for male it constituted 3 372 ml, for female – 2 861 ml. Also the vital index (50–65 ml /kg for male, 40–56 ml /kg for female) was low. The students of Physical Education and Sport Department had the highest indices.

The functional state investigation and organism adaptive reserves measurement are important for determination of the main tasks of physical education and sports. Optimal functional state is the precondition of high physical capacity and the potential possibility for adaptation to training loads. Cardiovascular system is such element that often limits the adaptive reaction after physical activity. Only 3.3 % of female and 18 % of male had pulse rate within normal limits. 31.9 % of male and 9.8 % of female had the pulse rate on 20 % higher than the norm, and in 49.2 % of female pulse rate was higher than norm almost on 50 %. The main part of students with the normal pulse rate studied at Physical Education and Sport Department, and 90 % of students with pulse rate exceeding the norm by 50 % – studied at the History Department.

*The general health status of respondents.* The number of students with chronic diseases increased significantly during the study in university. The main causes of such negative tendency are mental overwork, violation of work and rest, the lack of motion. According to the survey of V. Voitenko students generally evaluate their health as "good" (6.5 points – Department of History, 7.2 points – Engineering and Technical Department, 7.1 points – students of Physical Education and Sports Department). However, 43.1 % of students assessed their health as "below the average" and 7.8 % as "satisfactory" or "unsatisfactory".

Most of surveyed students (69.67–72.01 %, depending on specialty) belong to the major medical groups, and about 20 % had various diseases, so physical education lessons they had in special medical groups (table 1). The 98 of first and second year students from Physical Education and Sport Department, History Department and Engineering and Technical Department required regular clinical examination, but only 8 of them studied at the Physical Education and Sport Department. In comparison such clinical examination required 50 students of Engineering and Technical Department and 40 students of History Department. A disease of the respiratory system, gastrointestinal system, vegetative-vascular dystonia, and pyelonephritis was the most common diagnosis.

**Table 1.** *The distribution of students on medical groups*

Year	Total number of surveyed students, persons	The relative number of people in the medical group, %			The relative number of person which have not any training in respect of disease, %
		Main (healthy person)	Preliminary	Special	
<i>Male</i>					
2008	1 432	72.01	6.73	20.87	0.39
2009	1 375	70.38	5.44	23.61	0.57
2010	1 547	68.11	8.28	23	1.61
<i>Female</i>					
2008	1 872	70.75	5.39	22.2	1.66
2009	1 721	70.23	5.81	22.12	1.84
2010	1 918	69.67	5.12	23.02	2.19

According to the curriculum, students from Physical Education and Sport Department have 1-2 physical culture lessons and in free time – sport training, students of Engineering and Technical Department have such lessons only once time a week, but many of them trained additionally in university sports clubs or sports and recreational city facilities. Stu-

dents of History Department, just as students of Engineering and Technical Department have physical education lessons only once a week and of course that is not enough for optimal functional state. Also, according the survey the students of this Department have not any training in spare time. The students of this Department had the highest frequency of visits to clinic.

The students of Physical Education and Sports Department applied to clinic in 2,8 and 2,4 times rarely than the students of History and Engineering and Technical Departments, respectively. Only 10.2 % of students from Physical Education and Sports Department were suspended from studying on the period of three days. In the first semester all students irrespective of specialization direction more often visit the medical institution than in second semester. This can be explained by the consequences of bad adaptation to the new studying and living conditions or by increasing of mental and emotional stress or by sedentary lifestyle.

One of the most informative methods for detection of hidden changes in the cardiovascular system and especially the mechanisms of its regulation is orthostatic test. Hypotonic state, diseases accompanied by vascular autonomic imbalance, asthenic state, and fatigue is the causes of bad result after implementation of this functional test. 40 % of students of Physical Education and Sport Department and History Department and 60 % of students of Engineering and Technical Department had not any disruption in the work of cardiovascular system. But 43 % of students of Physical Education and Sport Department have the overload state, 36 % and 16 % of students of History and Engineering and Technical Departments had an increased tone of sympathetic or parasympathetic nervous system. Ruf'ye test also is useful for examination of training level of cardiovascular system. Most of students (70 % students of Physical Education and Sport Department, 88 % students of History Department, 90 % students of Engineering and Technical Department) have low or satisfactory level of training.

*The respondents' physical fitness.* Somatic health indirectly can be characterized by physical qualities – strength, coordination, endurance and flexibility (Pišot & Kropelj, 2006; P. Posadzki, Musonda, Debska, & Polczyk, 2009; A. Shibata, Oka, & Nakamura, 2007). The special exercises for the evaluation of physical preparedness of the population are used in Ukraine just as in other countries (Physical education: curriculum for higher educational institutions of Ukraine I-IV accreditation levels, 2003; Welk & Meredith, 2008). The results of these tests with the investigation of body composition and conduction of different functional tests are useful for investigation of physical state, future diseases forecasting and for developing of differentiated curriculum.

Over 95% of students evaluated their level of physical training as medium or high. This subjective characteristic significantly differed from the obtained objective results. All tests were difficult for students; all average results of physical fitness were low. According to the data, the highest level of strength, speed, endurance and flexibility have the students of Physical Education and Sport Department (table 2).

One of the basic physical qualities that characterize an optimal state of all body systems is endurance. It is tightly linked with the ability of respiratory and circulatory systems to supply oxygen to muscles during physical activity. Cardiovascular training is partly determined by types of physical activity in recent weeks or months; its low level increases the risk of cardiovascular disease. Thus, the second year students averaged their results in 100 m and 500 m run. In 2008–2009, the results of 100 meters run were 15.80–16.83 s for female and 13.88–14.04 s for male (the mark "good" or "satisfactory" according to National tests and standards of physical training of Ukrainian people).

**Table 2.** The physical fitness of students from different Departments: 1 – Physical Education and Sport Department; 2 – Engineering and Technical Department; 3 – History Department.

Physical Fitness Test	Academic year	Results of test					
		Female			Male		
		1	2	3	1	2	3
Curl-ups test (within 1 minute)	2008-2009	43 ± 2	38 ± 1	37 ± 1	49 ± 1	44 ± 1	45 ± 1
	2009-2010	48 ± 2	42 ± 1	41 ± 1	54 ± 1	49 ± 1	50 ± 1
Right angle push-ups testing (within 1 minute)	2008-2009	15 ± 0,6	15 ± 1,8	16 ± 0.6	38 ± 1,5	37 ± 0,9	29 ± 1
	2009-2010	20 ± 0,8	18 ± 2	18.4 ± 0.6	43 ± 1,6	41 ± 0,9	32 ± 1
V-sit reach, cm	2008-2009	14.5 ± 0,6	9.3 ± 1.3	13.5 ± 0.5	7.9 ± 0,8	5.9 ± 0,6	4.6 ± 0.8
	2009-2010	17.3 ± 0,6	13.9 ± 1.3	16.4 ± 0.6	11.3 ± 0,8	8.5 ± 0,6	6.7 ± 0.8
Shuttle run, 4 × 9 m, sec	2008-2009	10.44 ± 0.08	10.62 ± 0.10	10.92 ± 0.10	9.42 ± 0.08	9.68 ± 0.09	9.84 ± 0.09
	2009-2010	<b>10.23 ± 0.08</b>	<b>10.53 ± 0.09</b>	<b>10.87 ± 0.09</b>	9.15 ± 0.08	9.45 ± 0.08	9.76 ± 0.10
100 m run, sec	2008-2009	15.8 ± 0.18	16.76 ± 0.26	16.96 ± 0.19	14.05 ± 0.06	14.04 ± 0.07	13.94 ± 0.09
	2009-2010	15.53 ± 0.18	16.35 ± 0.24	16.83 ± 0.16	13.90 ± 0.06	13.85 ± 0.07	<b>13.88 ± 0.08</b>
500 m run, min	2008-2009	1.99 ± 0.07	1.92 ± 0.10	1.92 ± 0.04	3.45 ± 0.06	3.67 ± 0.06	3.53 ± 0.06
	2009-2010	1.77 ± 0.08	<b>1.85 ± 0.09</b>	1.67 ± 0.05	3.33 ± 0.06	3.56 ± 0.06	3.42 ± 0.04
“Long jump” test, cm	2008-2009	185.0 ± 2.7	176.3 ± 3.5	174.7 ± 2.8	205.6 ± 1.5	198.9 ± 1.3	198.8 ± 1.1
	2009-2010	193.2 ± 3.3	181.8 ± 3.0	179.5 ± 2.5	210.8 ± 1.3	204.4 ± 1.2	203.8 ± 1.1

Note. All results of tests improved (statistically significant at 0.05 level), except the data marked with bold type.

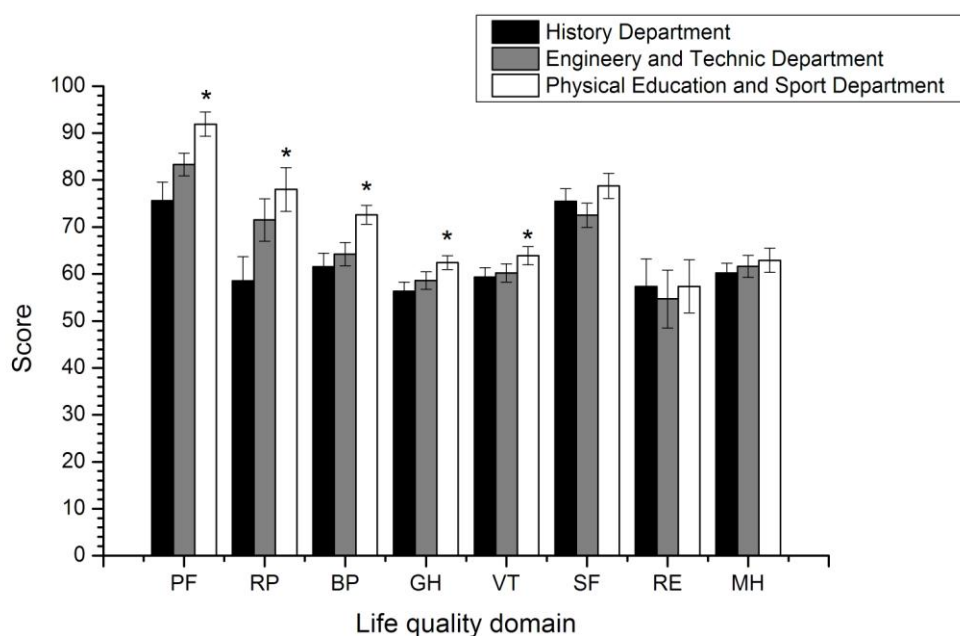
The heterogeneity of total sample was indicated by high index of variation, therefore, the more detailed analysis of individual performance was done. For example, the average results for long jump in female and male from Physical Education and Sport Department were 185.2 cm and 205.6 cm, respectively. According to National tests and standards of physical training of Ukrainian people the mark for such results is 3 points for female and 2 points for male (5 points is the maximal mark for test). Only 8.5 % of first year students and 13 % of second year students of Physical Education and Sport Department had for this test the highest mark.

However, the positive dynamic of physical improvement was observed during the academic year, the results of all tests become significantly better. Only the results of such tests were not improved: shuttle test (female), 500 m run (female from Engineering and Technical Department), 100 m run (male from History Department). On the basis of a comprehensive monitoring the strongly pronounced improvement of endurance (the results of 100 m run and 500 m run) and flexibility tests results (V-sit reach) was detected.

**The motivation level to physical culture lessons.** According to survey 94 % of students of the Physical Education and Sport Department and 64 % of students from Engineering and Technical Department have high and very high interest to physical culture. The most of students (60 %) which studied at History Department had the average interest to this lesson. Most students are convinced about the positive influence of physical education for health (82 % of Engineering and Technical Department and History Department, 96 % of students of

Physical Education and Sport Department). However the students of History and Engineering and Technical Department do not link up physical education with professional and applied training or formation of motor skills and abilities. Not a single student believes that physical education lessons would improve his intelligence capabilities. Despite this fact the half of students reported about attending of physical culture lessons for improving of physical fitness (40 % from Engineering and Technical Department, 50% from History Department, and 58% from Physical Education and Sport Department), only few of them worried about the improvement of basic physical qualities – flexibility (only 4 % of students from Engineering and Technical Department, 12 % of students from History Department, 22 % of students of Physical Education and Sport Department) or endurance (only 6 % from Engineering and Technical Department and Physical Education and Sport Department, 16 % from History Department). The weak pre-university preparedness, a large amount of educational work, the lack of interest to physical education, the absence of skills that are need for self-work were marked by students as the main organizational and pedagogical factors that have significant influence on the effectiveness of physical education.

*The students life quality and it's relation with physical activity.* The SF-36 questionnaire (Ukrainian version) was used for studying of life quality. According to some scientific publications this survey is the most successful for the evaluating of life quality of students (P. Posadzki, Musonda, Debska, & Polczyk, 2009) The physical fitness was evaluated by physical functioning, physical condition, level of bodily pain, general health. The mental and emotional state, the social relation and vitality were investigated for valuation of social and mental health. According to our data all indicators of students' life quality were higher than average (see Figure 1). Almost all life quality criteria of students of Physical Education and Sport Department were higher than the measure of students from other Departments. Statistically significant are the differences between the results of such scales – physical functioning (PF), role-physical functioning (RP), bodily pain (BP), general health (GH), vitality (VT).



**Figure 1.** The scores from a general health status questionnaire (SF-36) administered to students of different Departments. Domains covered by SF-36 were physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), vitality (VT), general health perception (GH), social functioning (SF), role limitations due to emotional problems (RE), mental health (MH)

Note. The differences between the domain of life quality of students of Physical Education and Sport Department and the students of other Departments are significant at 0.05 level.

The basic principles of life quality and healthy life-style are available in academic programs for students of this Physical Education and Sport Department; therefore it helps to profound the understanding of interconnection between life-style, physical activity and life quality. The peculiarity of the students from this Department is the greater number of lessons from physical culture and training in spare time. To identify relationships between physical activity and quality of life was studied the correlation between the different components of life quality and 500 m run. The development of functional abilities depends largely on the general aerobic dynamic endurance since it allows the preservation of all human vital functions as well as early prevention of most chronic diseases, associated in adulthood with physical activity levels. For male the statistically significant correlation coefficient were indicated between results of 500 m run and physical functioning, social functioning and role-physical functioning (table 3). Thus the better results of 500 m run correlated with the better physical fitness and ability to perform physical work or communicate with society. The female level of social functioning was not linked with aerobic endurance, but the correlation between 500 m run and general health, body pain and vitality was presented.

**Table 3.** Correlation between results of 500 m and components of life quality

	PF	RP	BP	GH	VT	SF	RE	MH
<i>Male</i>								
Results of 500 m run	-0.256*	-0.251*	-0.140	-0.140	-0.122	-0.293*	-0.078	0.086
<i>Female</i>								
Results of 500 m run	-0.512*	-0.389*	-0.436*	-0.288*	-0.341*	-0.066	0.113	-0.170

Note. Correlation are significant at 0.01 level

PF – physical functioning, RP – role limitations due to physical functioning, BP – bodily pain, GH – general health, VT – vitality, SF – social functioning, RE – role limitations due to emotional functioning, MH – mental health.

### CONCLUSIONS.

Most of Ukrainian students (69.67–72.01%) belong to the basic health group; about 20% suffer from various diseases and training in special medical groups. The number of students in different medical groups was not changed significantly during academic year. In quantity of students the body weight is deficient, the systolic and diastolic blood pressure and heart rate is increased, vital index and vital capacity of lungs is low. According to special tests the most of students are low trained healthy person. The level of physical training was evaluated as medium or high by 95 % of asked students. These subjective characteristics differ significantly from obtained objective results. All average results of physical fitness were low. The students of the Faculty of Physical Education and Sport have the best physical development and functionality and rarely appear low frequency applications in medical institutions.

Ukrainian students have high interest to physical culture and sport and are convinced about its positive impact on health, but only the students from the Physical Education and Sports Department have enough special lessons and training. About half of the students believe that the physical culture lessons are useful for the development of physical preparedness, but only few of them connect physical fitness with such physical capacities as coordination,

endurance, flexibility etc. The education specialization indirectly effects on the life quality of students. The essential differences between parameters of life quality of students from different Departments were detected.

The life quality of students of the Physical Education and Sports Department was the highest. The development of endurance, which is a necessary component of physical readiness, correlates with higher life quality of students.

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